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AUGUST, 1957

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2990 Kc.	5750 Kc.	6425 Kc.	7002.5 Kc.	7350 Kc.
3380 Kc.	5775 Kc.	6450 Kc.	7003 Kc.	7375 Kc.
3500 Kc.	5825 Kc.	6475 Kc.	7005 Kc.	7400 Kc.
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3892 Kc.	5900 Kc.	6525 Kc.	7018 Kc.	7500 Kc.
3925 Kc.	5925 Kc.	6547.9 Kc.	7021.7 Kc.	7525 Kc.
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4205 Kc.	6000 Kc.	6575 Kc.	7032.6 Kc.	7600 Kc.
4285 Kc.	6025 Kc.	6600 Kc.	7050 Kc.	7625 Kc.
4445 Kc.	6050 Kc.	6625 Kc.	7075 Kc.	7650 Kc.
4600 Kc.	6075 Kc.	6650 Kc.	7100 Kc.	7675 Kc.
4600 Kc.	6083.3 Kc.	6675 Kc.	7125 Kc.	7700 Kc.
4815 Kc.	6100 Kc.	6700 Kc.	7145 Kc.	7725 Kc.
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JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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ADVERTISING REPRESENTATIVE:

BEATRICE TOUZEAU,
96 Collins St., Melbourne, C.I.
Telephone: MF 4505

PRINTERS:

"RICHMOND CHRONICLE,"
Shakespeare St., Richmond, E.I.
Telephone: JB 2419.

MSS. and Magazine Correspondence should be forwarded to the Editor, "Amateur Radio," C.O.R. House, 191 Queen Street, Melbourne, C.I., on or before the 8th of each month.

Subscription rate in Australia is 12/- per annum, in advance (post paid) and A15/- in all other countries.

Wireless Institute of Australia
(Victorian Division) Rooms' Phone
Number is MY 1087.

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Published by the Wireless Institute of Australia,
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Melbourne, C.I.

EDITORIAL



LEST WE FORGET

With August once more upon us, our thoughts turn to Contests and especially the Remembrance Day Contest, for it was on the 15th day of this month twelve years ago that peace once more returned to a war-weary world, inevitably leaving in its wake a trail of bereaved. Amateur Radio and its many exponents was no exception. We were proud to have provided the fighting Services and the Merchant Marine with many operators who at the outset of hostilities provided a pool of experienced and readily available personnel to draw upon whilst new adherents were being trained to play their worthy part.

It was to hand down to posterity their unselfish sacrifice and for the part they played that the first contest to be known as the Remembrance Day Contest was inaugurated in 1947. This coming event therefore will be the tenth anniversary of this popular test in skill and endurance between States. The last few years have seen a marked increase in this Contest's popularity with newcomers and oldtimers, active and (usually) non-active Amateurs alike. It is not unusual perhaps then that the original concept of this contest has been largely

forgotten in the tear and rush of exchanging serials and of pitting one's skill and operating ability against the next comer.

A very worthy and commendable suggestion—to bring home to all participants the original nature and concept of this Contest—will most likely be incorporated in the event for 1958, but for this year we enjoin you to enter and enjoy yourselves at the same time sparing a thought for the real reason for the Contest. The Rules of the Contest have been modified over the years to endeavour to provide every entrant with an interest in his final State score, to obtain as many entries from within a State as possible, to encourage the use of all Amateur bands, and to keep the Rules simple and the results easy to check.

Your Division requires your entry to assist in its final points, so dust off the rig, warm up the receiver, stoke up the transmitter and get cracking—but before zero hour arrives, spare a thought for those to whom this Contest is dedicated and let your operating be based on the concepts of gentlemanly conduct and unselfishness which inspired THOSE YOU REMEMBER.

FEDERAL EXECUTIVE.

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A 100 Watt D.S.B. Mobile Transmitter

BY JACK NAJORK, W2HNH

WHEN John Costas, W2CRR, came up with his double sideband suppressed carrier transmitter ("CQ," Jan. '57, and "A.R.," July '57) we looked over the pros and cons and came to the unbelievable conclusion that here, at last, was the closest approach yet to something for nothing. For the mobile operator fighting QRM and low efficiency antennae, this mode of emission has, in general, all the advantages of s.s.b. but is actually simpler to build and operate than an a.m. transmitter of equivalent power. Here are the advantages as compared to an a.m. rig in the same power class:

1. More "talk power."
2. Easier and less expensive to construct.
3. Lower average d.c. input power required.
4. No critical or specialised components needed.
5. Instant change to straight a.m. if desired.

The drawback of the system, if it can be interpreted as such, is that you will now be talking to the s.s.b. men and must therefore be equipped to receive them. Lacking a b.f.o., this can easily be done by using the transmitter v.f.o. for carrier insertion, as will be explained later.

The basic difference between a high level d.s.b. transmitter and a conventional a.m. rig is in the final amplifier and the method of modulating it. Existing exciters and/or drivers can be used together with conventional speech equipment. This was one of the reasons for using a surplus Command transmitter as the heart of the mobile rig to be described. The other reason is that the oscillator circuit in the Command transmitter, when suitably isolated, takes a back seat to none in terms of stability. As in s.s.b., this feature is essential if the station at the other end is going to decipher your carrier-less sidebands.

CIRCUIT DETAILS

The Command transmitter we used originally tuned 4.0 to 5.3 Mc. and this range can easily be padded down to cover the 75 metre phone band (as well as the c.w. band if desired) by adroit manipulation of the oscillator coil slug and padder capacitor. Using this range Command rig has the added advantage of a higher "C" oscillator tank than would be the case if the 3.0 to 4.0 Mc. transmitter is used. This means better oscillator stability.

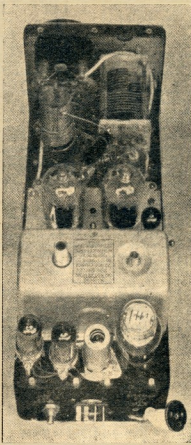
The original 1626 oscillator is followed by a 6AK6 buffer. It should be emphasised that some form of isolation between the oscillator and final is essential—otherwise the final will pull the oscillator frequency and you will have a novel system of f.m. plus double sideband less carrier, which will not endear you to the fellow at the other end. Since ours was a 12 volt system, the 6AK6 heater is wired in series with the front panel No. 47 pilot lamp thereby conserving 0.945 watts of d.c. power.

* Reprinted from "CQ," March, 1957.

● Last month an article on the theoretical approach to double sideband was reprinted from "CQ." From the same magazine herewith is printed a practical article on the same subject. Although it is referred to as a 100 watt d.s.b. mobile transmitter, it can quite easily become the basis of a home station transmitter. —Ed. "A.R."

(You think like this after years of mobiling.)

The 6AK6 develops its drive across a low "Q" slug-tuned coil. A look at the schematic will show you how to get away from the nasty chore of centre



tapping this coil while still ending up with push-pull drive to the final grids. The small mica trimmer at the lower end of the coil compensates for the 6AK6 capacity across the top side of this coil so you will end up with equal grid drive to each final tube. If you want to be different, you can drive the grids in parallel and operate the plates

in push-pull and come out with the same results. In case you hadn't recognised it, this final is nothing more than our old friend, the push-push doubler—except that in this application it is operated straight through. The result is carrier cancellation.

Separate grid RFCs and grid resistors are needed with this arrangement, but this is desirable because we want to be able to look at the grid current for each final tube in initial tune-up. This scheme of push-pull input can be considered self-balancing and should therefore give us better carrier cancellation, although this is apparently not a problem. At any rate, none of the stations worked to date has been able to find the carrier so it must be pretty well buried.

The final tubes are 12DQ6 t.v. sweep output bottles—big brother to the 12BQ6. Both these types have high permeance—that is, you can make them pull their load of plate current with comparatively low plate voltage. A second very desirable characteristic of this family of tubes is that the screen power requirements are relatively low. This means that the audio modulating power required for a given peak power output is correspondingly lower. Although the original 1626 tubes can be used, their higher screen power requirements may result in somewhat less peak power unless the audio section is beefed up. Although either the 12BQ6 or 12DQ6 can be used, we settled for the latter because of the higher plate dissipation rating (15w. versus 11w.) and slightly higher gm.

The final tank is a conventional shunt-fed, single-ended circuit with a tapped, link-coupled antenna coil. Although the popular pi-network can be used, the author prefers the link coupling system for mobile work because the final cannot be loaded unless the antenna is resonant. This is not necessarily true with a pi-network as evidenced by the Hams who unknowingly load a length of co-ax line rather than an antenna.

The original final tuning capacitor is left ganged to the oscillator merely because removing it would wreck the entire dial drive assembly. Although an additional tank capacitor is used in the final, the original capacitor is connected in parallel with this to build a higher "C" tank and also to afford some degree of oscillator-final tracking. If you want to be fancy, you can tailor the final tank coil and added tuning capacitor to achieve perfect tracking across the entire band. Since most of our operation is in the top 50 Kc. of the band perfect tracking was not essential and frequency excursions of this order can be made without retuning the final. (Provided your loaded whip is resonant!)

Now we come to the pay-off on this d.s.b. system; the audio requirement. Or, to put it more concisely, the lack of it. The modulator consists of a 12AU7 miniature dual triode with sections in parallel. (Yes, you can use 12SN7 or 12BH7 with no changes.) This is driven

by a resistance-coupled 12AT7 speech amplifier. The carbon mike input circuit is the familiar grounded-grid method which does away with the need for a mike current supply and mike transformer. Notice one important point in connection with the modulator. We must have push-pull audio output to modulate the screens. (By the same token, don't try to use tubes like 829B, 815, 832, etc., which have a common screen!) As the schematic will show, the screens are effectively at d.c. ground for d.s.b. emission. When audio is applied, one screen is driven positive and this tube will conduct. The second tube's screen, at the same time, is driven negative, so it just sits there and coasts. On the other half of the audio cycle, the second tube works and the first tube rests. In other words, at any given instant, only one final tube is working.

details, it is mentioned now in order to show the reason for inclusion of the d.s.b.-a.m. switch. More elaborate versions of this type of transmitter include a built-in tone generator to supply a steady audio modulating signal so the final can be resonated and loaded. This is not for us mobileers! So, you say, how about a steady whistle into the mike. Fine! But unless your whistler is a lot steadier than ours, you'll never find the plate current dip because small variations in whistle level will vary the plate current too much. The answer is the a.m. d.s.b. switch which provides two nice features.

In the a.m. position you have a conventional rig with carrier and two sidebands. This you can resonate and load in the usual fashion. You can also use this position to talk to other mobileers or die-hards who refuse to insert car-

switch to the other position restores the rig to d.s.b. A few minutes with the schematic will make this clear.

The modulation transformer required in this application is not critical except that it should provide a step-up in impedance between the modulator and final screens. A turns ratio step-up of at least one to two (full primary to full secondary) is needed and a step-up of one to four or one to six is much more desirable. With the lower ratios of transformation, more audio power will be needed for a given peak power output. Our transformer was dug out of the junk box and happened to be an interstage push-pull plates to push-pull grids. This was connected in reverse, with the modulator connected to one half of the grid winding to give a step-up of one to two.

In general, class "B" driver transformers are not suitable because they step down. However, if you can find a class "B" driver with push-pull plates to push-pull grids, you are in business. Connect it in reverse—that is, modulator connected to half the grid winding and screens connected to the plate winding. In our experiments we even tried a small 60 cycle power transformer with modulator connected to the 115v. primary and screens connected to the centre-tapped h.v. secondary. It worked almost as well as the interstage job, too, so do not be afraid to experiment!

CONSTRUCTION

The original 1626 oscillator circuit is left intact and the output coupling link feeding the 1625 grids is reconnected to the buffer grid. The 6AK6 buffer, 12AT7 speech amplifier and 12AU7 are squeezed into the rear apron space formerly occupied by the crystal socket and indicator tube. The O.A.2 voltage regulator sits just behind one of the 12DQ6s. No special precautions in construction are required other than the usual one of shielding long audio leads to prevent r.f. and/or audio feedback.

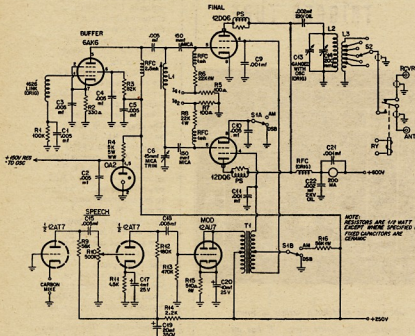
Power is supplied at the rear via a Jones plug while photo connectors are used to antenna connections.

The original oscillator dial can be covered with paper and new calibrations inked in, or, it can be replaced with a disc of thin aluminium suitably marked.

Octal sockets are needed for the 12DQ6s, these being secured to a sheet of aluminium which covers the area formerly occupied by the 1625s. Removal of the final padder condenser leaves room for the modulation transformer underneath. The original tank coil and antenna roller coil assembly are removed to make room for the meter, antenna coupling switch and final tank tuning capacitor. Naturally, it is not necessary to follow this exact order of construction. Just make your own parts fit the available space. Note also that control circuits are not shown. Your pet ideas are probably better than mine so why complicate the schematic?

JUNE 1957 CALL BOOK

The new issue of the Australian Radio Amateur Call Book is now available. Make certain you purchase your copy early as only a limited supply has been printed.



Schematic of Transmitter.

- L1—80 turns No. 28 enamel scramble wound on 1/2 inch diam. slug-tuned coil former.
- L2—30 turns No. 18 tinned, 1 inch diam. 2 1/4 inches long. Air wound with plastic ribs.
- L3—10 turns No. 14 tinned, wound around bottom of L2. Space diameter of wire and cement to L3 with 1/16 inch concentric clearance from L3. Tap every turn.

The idle tube is still hanging in the circuit, however, and its internal capacity acts as a neutralising capacitor for the working tube. Eureka!! True automatic neutralisation!

Obviously, with no audio applied and with zero screen voltage, application of plate voltage will produce very little plate current flow. With the antenna properly coupled, however, modulation will kick the plate current up to a high value. How, then, does one resonant and load the final of this rig, especially in an automobile?

Although this question would normally be answered later in the tune-up

- S1—D.p.d.t. toggle switch.
- S2—Ten position rotary switch.
- T1—Interstage transformer. Turns step-up at least 1:2, modulator plate to screen.
- See text.
- PS—5 turns No. 22 tinned wound on 100 ohm 1 watt resistor.
- RY1—12 volt d.c. s.p.d.t. relay.

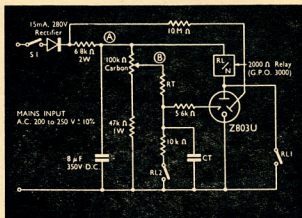
rier for you. Once the rig is tuned up in the a.m. position, flip the switch to d.s.b. and you are tuned and ready to go with lots of talk power. To put it another way, once you tune up properly on a.m., no retuning is necessary when switching to d.s.b.

In the a.m. position, the switch performs two functions. First, the cathode of one of the final tubes is opened. This leaves us with a conventional, single-ended class C amplifier. Second, B+ is applied to the remaining tube's screen through the centre-tap of the modulation transformer. End result: a screen modulated final! Throwing the

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TECHNICAL
SERVICE DEPARTMENT

Typical of the applications of the Z803U is the simple interval timer described here which can cover the range between 5 seconds and 10 minutes. It may be operated direct from any a.c. mains supply between 200 and 250 volts. To start a timing sequence the mains supply is switched on (S1). The d.c. voltage at point A will then rise, in about 100 milliseconds, to between 184 and 282 volts, the actual level depending on the value of the local mains voltage. The timer capacitor CT will start to charge up through RT, the timer resistor. When the voltage on CT reaches the critical trigger voltage of the Z803U the tube will fire, pulling in the relay, partially discharging the 8 microfarad smoothing capacitor, and lowering the voltage at A. The tube will self lock on contact RL1 thus extinguishing the Z803U, and the relay current will then be limited by the 6.8 kΩ series resistor. Contact RL2, which should make after RL1, re-sets the timer capacitor to zero volts.

However, the relay drops out only when S1 is opened. A new sequence can then be started on reclosing S1.

The 100kΩ preset potentiometer allows the timing circuit voltage to be set up so as to compensate both for component tolerances and for the value of the local supply voltage. The pre-firing voltage at point B will be about 170 volts.

The values of RT and CT will be set by the required time interval T', and can be determined from the fact that $T' = 1.6 RT.CT$.

RT should be a high stability resistor, while CT must be a capacitor with a small power factor, e.g., a paper or plastic film capacitor. All other components are of ± 10% tolerance.

90° R.F. Phase Shift Networks

BY N. L. SOUTHWELL,* VK2ZF

PART ONE

THE most critical sections of phase shift type s.s.b. equipment are the 90° audio and r.f. phase shift networks. The subject of Audio Phase Shift Networks was covered in a previous article in "A.R." (June and July, 1955), and in this article the various types of r.f. networks used will be dealt with.

These networks are simple in structure, they are not wide-band devices like the audio networks, as they have to produce a phase shift of 90° at only one frequency, the carrier frequency at which the s.s.b. signal is generated in the case of an exciter, or, the frequency at which detection takes place in the case of an s.s.b. receiving adaptor. The networks discussed can be used either in transmitter exciters or receiving adaptors.

The function of the r.f. phase shift network is to produce two voltages, equal in amplitude, but 90° apart in phase. Any discrepancy between the amplitudes of the two voltages, which we will call the two outputs, or a deviation from the 90° phase difference between them, results in a reduction of the sideband rejection, or suppression, and therefore, a reduction in performance of the associated equipment.

Amplitude variation between the two outputs affect the sideband suppression, in accordance with the formula:

$$\text{Sideband Suppression} = 20 \log \left(\frac{200 + E}{E} \right)$$

where E is the difference between the two output voltages, given as a percentage.

Thus a voltage difference of—

- 1.0% results in 46 db. suppression.
- 2.0% " " 40 db. "
- 4.0% " " 34 db. "

The above figures assume that the phase shift produced by the unit is perfect. Phase shift variations from 90° between the two outputs also affects the sideband suppression, and is calculated from the formula:

$$\text{Sideband Suppression} = \tan \left(\frac{A}{2} \right)$$

where A = the number of degrees that the phase shift between the two network outputs departs from 90°.

- Thus an error of—
- 1.0% produces 40 db. s.b. suppression.
- 2.0% " 35 db. "
- 3.5% " 30 db. "

These figures assume that the voltage balance of the two outputs is perfect.

Errors from both sources may be present at any time, so the r.f. p.s.n. (phase shift network) should be adjusted as carefully as possible to the required conditions.

Phase shift s.s.b. exciters fall into two general types: (1) Those that generate the s.s.b. signal at some fixed frequency outside the Amateur bands (usually 5 or 9 Mc.), and then use the heterodyning principle to obtain a signal within an Amateur band; (2) Exciters that generate the s.s.b. energy directly at the transmitter operating frequency.

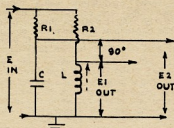


Fig. 1.—"Two-Branch" Type of Phase Shift Network.

At operating frequency F:

$$X_C = X_L = R_1 = R_2$$

and the input $Z = R_1 \text{ or } R_2$

$$C \text{ in pF.} = \frac{10^9}{2\pi FR}$$

$$L \text{ in } \mu\text{H.} = \frac{R}{2\pi F}$$

where R is in ohms, and F is in Mc.

F. Mc.	R1, R2 Ohms	C pF.	L μH.
3.6	300	147	13.33
3.6	200	221	8.88
7.1	300	72	6.74
7.1	200	112	4.45
14.2	300	35	3.37
14.2	50	224	0.56
21.2	100	75	0.74
21.2	50	150	0.37
28.4	100	56	0.56
28.4	50	112	0.28
28.4	25	224	0.14

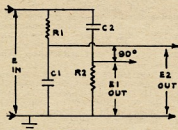


Fig. 2.—"Two-Branch" Type of Phase Shift Network.

At operating frequency F:

$$X_{C1} = X_{C2} = R_1 = R_2$$

and the input $Z = \frac{1}{2} (R_1 - X_C)$

Refer to Table with Fig. 1 for values of components.

RECEIVING ADAPTORS

Phase shift receiving adaptors all operate at a low frequency, normally that of the i.f. channel of the main receiver to which they are attached.

The first type of exciter requires only one r.f. p.s.n., the second type requires an r.f. p.s.n. for each band (where operation is desired); this can produce quite a headache, as will be explained later, on some of the higher frequency bands. Also, with the latter type of

exciter, another matter has to be taken into consideration. This is that each Amateur band occupies a slice of the frequency spectrum, and an r.f. p.s.n., when adjusted for optimum performance at any one frequency, will have a poorer performance if required to operate on a frequency somewhat removed from that channel. This effect is worst on the 3.5 Mc. band, which is the widest band percentage-wise in Australia, i.e. the band runs from 3.5 to 3.8 Mc.; if the r.f. p.s.n. is adjusted to the centre band frequency of 3.65 Mc., a variation of ± 150 Kc. would be required to cover the whole band. This, as a percentage, works out to be $\pm 4.1\%$ of 3.65 Mc.

Frequency changes affect some networks only as far as voltage balance of the outputs is concerned, the two-branch network in Fig. 1 is one such. The voltage unbalance in percentage in this network is equal to the percentage difference between the alignment frequency and the operating frequency. Other networks have both the amplitude balance and the phase shift difference between the outputs affected, the pi network in Fig. 5 is one such. However, on most bands s.s.b. stations operate around some particular part of the band and this minimises frequency shifting.

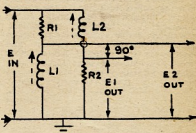


Fig. 3.—"Two-Branch" Type of Phase Shift Network.

At operating frequency F:

$$X_{L1} = X_{L2} = R_1 = R_2$$

and the input $Z = \frac{1}{2} (R_1 + X_L)$
Refer to Table with Fig. 1 for values of components.

The impedance of the r.f. p.s.n.'s used on the Amateur bands range from around 300 ohms down to 50 ohms or lower, the impedance being lowered as the operating frequency is raised, to minimise the effects of stray inductance and capacity of the associated circuitry on the network performance.

Careful consideration should be given to the power level at which the r.f. p.s.n. should be operated.

It must be borne in mind that the outputs from the network provide the switching voltages at their operating frequency to the balanced modulators. Too little voltage restricts the audio input that the balanced modulators can handle before overloading, and consequently restricts the sideband output; too much voltage brings other troubles.

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Firstly, almost all networks use resistors, and these components must be non-inductive and so are usually carbon. Should these resistors become heated, due to operation at too high a power level, or for any other reason, they change value, the change is usually permanent, generally the resistor increases in value by anything up to 20%.

The degree of permanence of the balance and phase shift adjustments of any network is no better than the stability of its components, hence changes in the magnitude of any component cannot be tolerated.

In s.s.b. exciters it is common practice to use 5w. or 10w. resistors in the r.f. p.s.n.'s, made up either of single units or 1w. resistors of suitable value in parallel.

Secondly, the greater the power at which the network operates, the greater will be the difficulty in minimising the carrier leakage, both through the balanced modulators, which can be controlled to a certain extent by the carrier null controls, and around the balanced modulators by stray coupling. This latter can only be minimised by shielding and filtering and can be a nuisance.

Between the two extremes lies the optimum operating power level, a little time spent in determining it will pay good dividends and result in a minimum of residual carrier on the transmission, whilst still retaining efficient operation.

In the case of receiving adaptors, the power level of the network should be kept as high as possible, consistent with the ability to minimise the carrier getting through to the audio stages following the balanced modulators. Unwanted carrier voltage on the audio grids can produce distortion and whistles in the output. All adaptors incorporate efficient filter circuits between the balanced mods. and the audio stages, to get rid of the carrier energy. The object in keeping the operating level of the r.f. p.s.n. up, in the case of receiving adaptors, is to provide favourable conditions for exalted carrier tube reception which is desirable in these adaptors.

In regard to diode balanced modulators, whether germanium or vacuum tube, the r.f. voltage at which they operate in s.s.b. exciters, should be sun for every volt of audio applied to the balanced mods, ten volts of r.f. should be applied. In s.s.b. receiving adaptors vacuum tube diodes should be used, never germanium, and the ratio of the input voltage from the oscillator to the input signal voltage can be raised, even as high as 100:1.

The output voltage required from r.f. p.s.n.'s used with multi-element tube type balanced modulators cannot be laid down as definitely as it can be in the case of the diodes above, the drive required depending upon the tube type and the operating conditions of the stage.

From the foregoing it can be seen that the r.f. phase shift network used in any piece of equipment is to a certain extent determined by the type of balanced modulator circuit it is required to drive.

For instance, diode balanced modulator circuits dictate that the impedance of the associated r.f. p.s.n. drive

circuits to them be around 50 ohms or lower for satisfactory operation. This applies to either germanium or vacuum tube diodes; incidentally, the most satisfactory vacuum tube diode has been found to be the 6AL5.

Balanced modulators using multi-element tubes are, compared to diodes, relatively non-critical in their driving source impedance requirements, so the designer can normally use an r.f. p.s.n. having a somewhat higher impedance.

R.f. phase shift networks can be classified under one of two headings:

(1) Those using two branches each of which has a phase shift of 45°, one advancing, the other retarding the input voltage, to give the required 90° difference between the two outputs.

(2) Networks that derive the 90° phase shift in one operation and use the input voltage, or portion of it, as one of the two output voltages. Figs. 4, 5, 6, 7 and 8 show circuits of this type of network.

TWO-BRANCH NETWORKS

The circuit of Fig. 1 is probably the one most commonly used in phase shift exciters, and in the opinion of a number of people, including the writer, one of the most frustrating to try and adjust. $R1 = R2$, and on the 3.5 Mc. band the value is usually 300 ohms. The values of C and L are chosen so that at the operating frequency, their reactance equals that of the resistance wired in series with them, i.e.

$$R1 = Xc = 300 \text{ ohms.}$$

$$R2 = XL = 300 \text{ ohms.}$$

The phase shift of each branch of the network will be 45° and can be verified from the formula:

$$\tan \text{Angle} = \frac{X}{R}$$

where angle = phase shift in degrees.

From the above, $\tan \text{Angle} = \frac{300}{300}$

$$= 1 = \tan 45^\circ.$$

The input impedance of Fig. 1 is resistive and is equal to $R1$ (or $R2$).

Figs. 2 and 3 are also two-branch networks. Fig. 2, using resistance and capacity, is to be preferred to Fig. 3, using resistance and inductance. The reasons for this are:

- (1) Inductances have a certain amount of distributed capacity.
- (2) The two inductances would have to be positioned so that their fields would not interact.
- (3) Inductance values are not as convenient to adjust as condenser values, nor can they be varied over so wide a range as easily as condensers.

Each branch of the circuits in Figs. 2 and 3 introduces a phase shift of 45°. It will be noted that the relative positions of the resistive and reactive components of these networks differ from those given for Fig. 1, where both inductive and capacitive reactances are used in the one network.

The circuit of Fig. 2 has been very satisfactorily used in several receiving type s.s.b. adaptors, popular amongst American s.s.b. enthusiasts.

The impedance of the network in this application, at a frequency of approximately 450 Kc., was raised to a somewhat higher value than can be used on the Amateur bands, as the effects

of stray capacity and inductance in the associated circuits upon the operation of the r.f. p.s.n. were much less at the lower frequency. The values of components used were $R1$ and $R2$, each 3,300 ohms (1w. 5%); $C1 = 100 \text{ pF}$, $C2 = 75 \text{ pF}$, mica, paralleled by a 50 pF. variable for network adjustment purposes.

The input impedance of these networks, Figs. 2 and 3, is not a pure resistance, and the magnitude of the reactive component can vary over a wide range as the frequency is changed.

TWIN TUNED NETWORK

Fig. 4 is a network in the second group of r.f. p.s.n.'s, those that produce the 90° phase shift in one operation.

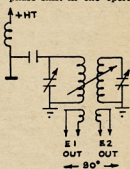


Fig. 4.—Twin Tuned Circuit Network.

The two tuned circuits are each capable of being tuned through resonance at the operating frequency. The two coils are mounted so that the coupling between them may be adjusted until a position is reached where they are critically coupled. Generally, this means that one coil and its associated link is mounted firmly in one position, whilst the second coil and link, which are of similar size and construction to the first, are mounted on a swivel bracket. The position of this coil is varied during the adjustment of the network and when the correct position is obtained the bracket is locked in position.

The two circuits are adjusted so that one is detuned on the h.f. side of the operating frequency, and the other on the l.f. side, to a point where the voltage delivered from each circuit is 70.7% of that which is obtained when the circuits are tuned to resonance.

Under the foregoing conditions, when the coils are critically coupled, the voltage outputs from the two links are 90° apart in phase and equal in amplitude.

The adjustment of this network (Fig. 4) always takes some time and as can well be imagined a considerable amount of fiddling with it is required in the initial stages. The higher the operating frequency, the trickier it becomes in adjustment. A number of coil positions have to be tried in succession and notes kept on the performance obtained at each position, finally the optimum position is arrived at.

This type of phase shift network is widely used in s.s.b. exciters operating at a fixed frequency of 5 or 9 Mc., and working on the heterodyne principle to obtain signals in the Amateur bands.

The two output circuits being links, have a low impedance, and it is common practice to use this type of r.f. p.s.n. to feed balanced modulators utilising diodes.

PI NETWORK

The network shown in Fig. 5 is a single section l.p. pi filter, terminated in its characteristic impedance.

Pi networks can be used for two purposes:

- Impedance matching,
- Phase shifting.

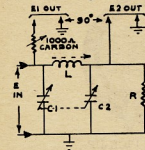


Fig. 5—Pi Type Network.

At operating frequency F:

$$XC1 = XC2 = XL = R$$

and the

$$\text{Input } Z = R.$$

Refer to Table with Fig. 1 for values of components.

The normal pi couplers and inter-stage filtering circuits used by the Amateur fraternity come under the first category, whilst the circuit in Fig. 5 comes under the second.

It is emphasised now that this circuit, when properly adjusted, is not tuned anywhere near resonance at the operating frequency. It is a single section low pass pi filter, which, when used on the various bands with the constants given, will produce a 90° phase shift at the operating frequency.

When a l.p. pi network is used at a frequency, 0.707 times its designed cut-off frequency, and terminated in its characteristic impedance, a phase shift of 90° occurs between its input and output terminals.

The 1,000 ohm carbon potentiometer in series with the lead to "E1" output (in Fig. 5) is to allow compensation to be made in the "E1" output circuit for any loss that occurs in the filter feeding the "E2" output. It is the amplitude balance control for the network and is initially set at minimum, frequently only a fraction of the resistance available is required, and on occasions the circuit has been operated reasonably satisfactorily without the potentiometer.

The pi filter has one good feature, the stray circuit capacities fall across

the input and output capacities of the filter and can be compensated for by reducing the value of those components by the required amount. This is in direct contrast to the two-branch type of networks, where stray capacitance in the associated circuits results in a degraded performance of the p.s.n.

The pi filter also discriminates against harmonics which can be a handy feature.

A disadvantage of the pi type network is that if operation is undertaken on a frequency differing from the frequency it was adjusted to operate at, both the phase shift and the voltage amplitude balance are affected.

However, this network, once the proper constants have been found, has proved itself to be very easy to adjust, the writer having used one for some time with excellent results.

The pi network in some s.s.b. circles has been rather disparagingly spoken of. The writer is of the opinion that a number of people have condemned the circuit without ever trying it.

TUNED PI NETWORK

In Fig. 6 is shown another pi network. This unit is a tuned pi network and is known by that name. The circuit has not had a great amount of use in Amateur circles, probably because it is not well known. It differs considerably in its operating conditions to the pi network of Fig. 5.

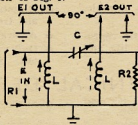


Fig. 6—Tuned Pi Network.

The basic relationships for Fig. 6 are given from the formulae:

$$E_{out} = \frac{E_{in} J R_2}{Z}$$

$$\text{where } Z = \sqrt{\frac{L}{C}}$$

$$\text{and } (2 \pi F)^2 LC = 1$$

$$R1 = \frac{Z^2}{R2}$$

$$F = \text{operating freq.}$$

$$J = \sqrt{-1}$$

From these it can be seen that the input is a pure resistance and that the amplitude balance can be adjusted by variation of the load resistor R2. When R2 changes the input impedance stays resistive, and the phase shift between E1 and E2 does not change from 90°.

The circuit is operated, tuned to resonance at the operating frequency.

The circuit when designed for a low impedance, say 100 to 200 ohms, practically ensures correct phase shift when tuned to resonance, and the amplitude balance is capable of control independently of the phase shift. For use on 3.6 Mc. the constants for the circuit in Fig. 6 are C = 330 pF, L1 and L2 each 3.3 μH, slug adjusted; R2 = 200 ohm variable carbon pot, R1 approximately 150 ohms.



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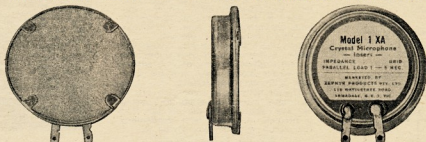
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VK2WJ	13	VK2AEZ	10
VK3PF	5	VK3XA	11
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VK4RY	2	VK3ACL	14
VK4HR	4	VK3ZD	16
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This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved.

Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars, being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case $1\frac{1}{2}$ " diameter (rear), $\frac{3}{8}$ " thickness, 1-13/16" overall diameter (front) with filter fitted.

Frequency Response = 60-6,500 c.p.s.
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Modifying the AR7 Receiver

PART FOUR

BY G. M. BOWEN,* VK5XU

MAKING A 10-METRE COIL BOX

This section will be devoted to the making of a 10 metre band coil box and its alignment procedure. At the time when this coil box was made, the 33 Mc. beacon stations were still operating and as these were a guide for "break-throughs" on 50 Mc., the range was extended to cover this frequency. However, when you decide to tackle the task it is only a matter of altering the ratio of each air condenser to cover whatever you may wish to have.

As it was desired to keep the receiver coil boxes intact, another Band A box was bought and the coils therein removed and put away for r.f. chokes (that's only my Scotch ancestry; you may feel disposed to pitch them into the waste paper basket). Take care when removing the unit that the small bakelite spur, which holds the coil upright, does not get broken for this is exactly the size to support the new coil.

Freq. Range		Bandspread	
Dial Reading	Freq. Mc.	Dial Reading	Freq. Mc.
462	25	224	28.0
340	26	220	28.1
276	27	215	28.2
224	28	210	28.3
175	29	205	28.4
132	30	200	28.5
91	31	195	28.6
53	32	190	28.7
22	33	185	28.8
		180	28.9
		175	29.0

A set of 28 Mc. band coils manufactured by R.C.S. for their multiband unit was purchased and modified for the purpose. As this would be at least seven years ago, these coils may not be available now, so the exact details of each coil will be furnished in the text and by diagram. The location of the connecting wires can make quite a difference to the ultimate performance on this band.

A-band coil box has not a second air trimmer, so four 21 plate condensers were obtained from disposals and installed into the vacant positions for C2, C4, C6 and C8. If these are not available from any source, it may be possible to obtain small Eddystone trimmers and make up the necessary capacitance with good silvered mica or special ceramic types with zero coefficients. Maximum capacitance range should be about 70 pF.

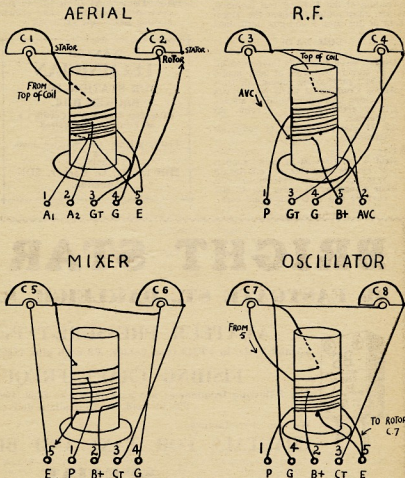
Before mounting the condensers make sure that the rotor contacts are clear and fit tightly, for very slight movements due to vibration can make the alignment a nightmare if there is the least bit of sloppiness. That same

warning goes for all the components and rigid mounting of the coil and its associated wiring is of prime importance. Use bare tinned copper wire for all the leads, keeping them well away from each other if not tied to the same point. The primary winding on each coil may be wound with enamel covered wire—make sure that there are no dry joints, that's all!

Do not be tempted to add extra turns to the plate "tickler" winding on the oscillator coil or you may find that

From the way that the receiver performs on this range, there does not seem to be any point in trying to use iron dust cores. They generally only add mechanical troubles and if R.C.S. and other manufacturers with more design equipment than most of us have at our disposal, still use air core for these higher frequency ranges, then maybe it's a good thing to follow suit.

Spread the turns if necessary or use a short-circuit turn as the National does.



suddenly the oscillator will jump frequency as the plate circuit takes control (being usually of a higher Q than the grid coil with its 50K resistor across it for bias).

The diameter given for the grid coils, is taken across the outside of the windings. Some adjustment of the length of the coil may be necessary to obtain the range required, but generally all but major shift can be accommodated by adjusting the two air trimmers.

Alignment procedure follows the system used for Band E coil box but with these preliminary steps. The oscillator unit is adjusted to cover the range required either with a modulated oscillator or frequency meter. Unfortunately it is not possible to use a grid-dip meter with these coils for very obvious reasons. Getting the oscillator on the high side of the signal is a little tricky because with the output of the modulated oscillator attached to the grid of the ECH35, there is practically

* 73 Portrush Road, Toorak Gardens, S.A.

no selection of the frequency by the mixer coil.

A good tip is to always swing the mod. oscillator down from the high frequency end until the signal appears and then, continuing on to about 900 Kc. lower, the signal that is wanted should appear.

If the condensers are similar to those described in the text, then the settings given in the coil data will allow a fair setting to start the alignment.

The conversion cannot be hurried, so be prepared to spend quite a lot of time without becoming discouraged. Aligning a new set of coils can take up to four hours—so good luck. When it has been done you will be satisfied.

The next article will have the band-spreading of the E band coil included, so you may prefer to leave the alignment of this band F coil box until then.

COIL DATA

Aerial—
Grid: 5 turns No. 22-24 tinned copper, $\frac{1}{2}$ " outside diameter of coil; length 5/16"; polystyrene tubing; air core.

Aerial Coupling: 2 turns No. 40 silk covered and interwound as shown.
C1: 18 plate; 9 stator, 9 rotor, air trimmer.

C2: 21 plate; 10 stator, 11 rotor, air trimmer.

R.F.—

Grid: 5 turns No. 22-24 tinned copper, $\frac{1}{2}$ " outside diameter of coil; length 5/16"; polystyrene former; air core.

Plate Coupling: $3\frac{1}{2}$ turns No. 40 silk covered and interwound; air core.

C3: Same as for aerial box; half in mesh.

C4: Same as for aerial box; three-quarters in mesh.

Mixer—

Grid: 5 turns No. 22-24 tinned copper, $\frac{1}{2}$ " outside diameter of coil; length 5/16"; polystyrene former; air core.

Plate Coupling: $3\frac{1}{2}$ turns No. 40 silk covered and interwound.

C5: Same as before; half in mesh.

C6: Same as before; seven-eighths in mesh.

Oscillator—

Grid: $5\frac{1}{2}$ turns No. 22-24 tinned copper; $\frac{1}{2}$ " outside diameter; slightly longer than 5/16"; spread to obtain correct inductance value; air core.

Plate "Tieklar": $2\frac{1}{2}$ turns No. 40 silk covered; interwound as shown, starting below the grid coil.

C7: As before; one-eighth in mesh.

C8: As before; three-quarters in mesh.

N.B.—C1-C8 do not correspond to values in the AR7 circuit diagram, but only to this article's diagrams.

D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Cer. Cnt- No. ries	Call	Cer. Cnt- No. ries
VK3ATN	26 193	VK3JD	1 155
VK4HR	12 182	VK4KS	9 152
VK4PJ	21 192	VK6KW	4 150
VK6RU	2 188	VK4RW	23 147
VK3DZ	3 176	VK3LN	11 141
VK3EE	10 163	VK3JE	7 140

C.W.

Call	Cer. Cnt- No. ries	Call	Cer. Cnt- No. ries
VK3KB	10 225	VK3CX	26 210
VK4PJ	29 224	VK3BY	45 193
VK3DZ	6 222	VK2EO	2 183
VK4HR	6 218	VK3YL	29 178
VK3FH	15 215	VK4EL	9 175
VK3XU	48 213	VK6RU	18 172

Amendments

VK3JE	21 148	VK6RJ	42 128
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OPEN

Call	Cer. Cnt- No. ries	Call	Cer. Cnt- No. ries
VK2ACX	6 239	VK3JE	12 210
VK4HR	7 233	VK3HG	3 201
VK4PJ	22 232	VK2NS	16 195
VK3BZ	231	VK4EL	10 175
VK3XU	61 221	VK6KW	13 171
VK6RU	8 218	VK3DI	2 170

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Date of Contest: 1st December, 1957, to 31st January, 1958.
Duration: From 0001 hours E.A.S.T. 1st Dec., 1957, to 2359 hours E.A.S.T. 31st Jan., 1958.

1. There shall be three main sections to the contest:

3. All Amateur v.h.f. bands may be used, but no cross-band operating is permitted, with the exception that 50-54 Mc. and 56-60 Mc. will be considered to be the same v.h.f. band for overseas contacts.

5. Only one contact per station per band is allowed each calendar day and arranging schedules for contacts on other bands is not permitted.

7. Entrants must operate within the terms of their licences.

tween 001 and 100 for the first contact and which will increase in value by one for each successive contact, e.g. if the number chosen for the first contact is 053, then for the second contact the number will be 054, for the third 055, and so on. If any contestant reaches 999 he will start again with 001.

10. **Scoring:** Scoring will be based on the table shown herewith.

Name	Section
Address	Call Sign

Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the contest.

12. The right is reserved to disqualify any entrant who, during the contest, has not observed regulations or who has consistently departed from the accented code of operating ethics.

	To												Overses other than ZL
	VK1 VK2	VK3	VK4	VK5	VK6	VK7	N.T.	VK9	ZL1	ZL2	ZL3	ZL4	
VK1-VK2	—	5	4	2	10	4	6	10	7	7	7	7	10
VK3	5	—	4	4	9	10	6	10	7	7	7	7	10
VK4	4	4	—	5	10	7	3	7	7	8	8	8	10
VK5	2	4	5	—	7	5	3	10	8	8	8	8	10
VK6	10	9	10	7	—	10	10	10	10	10	10	10	10
VK7	4	10	7	5	10	—	7	10	7	7	7	7	10
N.T.	6	6	3	3	10	7	—	3	10	10	10	10	10
VK9	10	10	7	10	10	10	3	—	10	10	10	10	10
ZL1	7	7	7	8	10	7	10	10	—	—	—	—	—
ZL2	7	7	8	8	10	7	10	10	—	—	—	—	—
ZL3	7	7	8	8	10	7	10	10	—	—	—	—	—
ZL4	7	7	8	8	10	7	10	10	—	—	—	—	—
Overses other than ZL	10	10	10	10	10	10	10	10	—	—	—	—	—

[illegible][illegible]

NOTE.—The standard W.I.A. Log Sheet follows the above form.

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C.D.E.N. NEWS

We are pleased to welcome Roy Hart, VK2HO, to the ranks of Divisional Co-ordinators. Roy's experience at the Commonwealth Civil Defence School will prove valuable in guiding the N.S.W. boys towards the ultimate aim of the combined emergency services. Jim Corbin, VK2YC, no doubt, will appreciate the rest from the strain imposed during his long term of office.

Divisional Co-ordinators desiring to follow in the steps of VK4 may obtain from their State Emergency Directors loan of films suitable for screening at Institute meetings. Members of the Institute, whether active in C.D.E.N. or not, will learn much from these films.

Equipment for emergency use can be relatively simple, however it must be efficient, stable and rugged. Components used should be of a type readily available or for which substitutes are available which readily mount in the same space. Obviously for quick transfer between fixed channels crystals are a must, however provision must also be made for v.f.o. operation.

The foregoing does not mean that equipment need be elaborate or complicated. Even if some commercially minded people do sneer at the finished product—it is the results that count. Your Publications Committee would appreciate the opportunity of publishing articles covering suitable equipment.

Irrespective of the outcome, members of VK4 and VK9 are to be applauded for their persistent efforts to reach the father of a very sick Melbourne boy so that he could speed home from New Guinea to comfort his boy. That was one time when Hams at the receiving end could not be expected to be aware of impending emergency. However, it does stress once again the need for local Hams to be in readiness whenever there is any indication of an emergency developing in any form. Disasters due to weather in the main are at least preceded by weather forecasts which serve as a warning. Just as, generally speaking, conditions suitable for bush fires do not develop overnight.

Naturally such things as explosions, freak cloud bursts, collapsing dams, do not advertise the coming event. In such cases we can only be expected to assess the communications

requirements and commence operations as quickly as possible. This means that the greater the number of operators who can leave a receiver running on the emergency calling frequencies of 3501 and 7002 Kc., the greater the possibility of establishing contact quickly.

The easiest way of ensuring that the greatest number will hear an emergency call is to adopt the system of employing an adaptor which feeds into the family receiver if stages. In the average household the radio goes most of the day so that a call on the frequency immediately impinges on the local programme, enabling the YF to carry out previously laid down drill for such events.

In the evening of course the OM only has to put down his newspaper and toddle out to the shack, unless of course he is one of those lucky individuals with remote control from the fireside.

Federal Co-ordinator, W.I.A.

REMEMBRANCE DAY CONTEST, '57

Have your equipment ready for this Contest on 17th and 18th August. See the June issue of "AR" for Rules; also additional rule in July issue page 18.

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YL CORNER

BY PHYL MONCUR*

A CONVERTER FOR THE XYL

Several OMs have come along to me and said they wish I would have a talk to their XYLs and try and make them see the right side of Amateur Radio. Their comment usually is "You seem to be able to put up with it but my wife just can't stand any part of it." Well here it is, and it is directed more at the OMs than the XYLs.

Firstly and foremost, don't try to rush her, give it to her in small doses. Don't just throw the handbook down in front of her and tell her to read it. After all her book-book wouldn't look very interesting to you, now would it? Say if the great Einstein were to place his theory of relativity in front of you, would it mean anything to you? No, of course it wouldn't. But should the great Einstein explain it to you, little by little. It would then become mighty interesting. So you just pretend you're the great Einstein and really try and help her to learn what it's all about.

Don't be too jealous with your precious hobby, share it with her, let her do some of the wiring and perhaps wire up a converter for mobile work, that's bound to appeal. But make sure it works even if you have to re-wire it yourself sometime when she's not around.

Teach her the code. Most women take very easily to c.w. and you'll probably find after practice, she'll be able to beat you at it. This won't do you any real harm and will give her a sense of achievement. C.w. can be very handy as a means of conversation when you don't want the children to know what your chats and you'll find it will grow on her, but guard against giving it to her in big doses as you'll only give her a headache. Be kind and patient when she's slow to comprehend, and above all never be sarcastic when her efforts at building aren't so hot.

Explain to her the elementary things about radio and keep getting a little further advanced with your talks about it. We use it at our QTH but our harmonics retaliate by talking in pig-latin and we can't understand them.

* 235 Union Road, Ascot Vale, Vic.

Teach her the Q code and other abbreviations so that she can better follow the conversations on the air. When there's a contest on, give her a part in that too. Keeping the log or writing out the QSLs will keep her interested and a contest can be really exciting when the bands are busy, even to an XYL. Helping you to recognise faint c.w. signals (even though you know darn well what they are) will bound to appeal to her and make her feel very important and necessary.

Try getting her to come along to the transmitter hunt picnics or the fox hunts for a start, she'll meet other XYLs there and if she drives the car, let her do the driving even if she can't drive the car as well as you think you can. The very driving of the car will, as well as probably giving her a lot of enjoyment, make her feel that she is playing some real part in it and is necessary to you. If she tries to start the car off in top gear, don't stop her, she's probably only trying to save time and get there a little quicker. And if she grates the gears and you must groan, then for Pete's sake keep your audio down, she may not have that great selectivity with the gear stick, but she's probably got high sensitivity of feelings.

If she doesn't drive the car, let her be the navigator and teach her to tune in the signal and line the beam up to it. Forget that this listening period will probably cause you to come last in the next few hunts, but that part of it is not nearly so important as being able to do something together and in time she'll probably turn out to be a real help to you.

Try and be tidy with your equipment, particularly if the shack happens to occupy one end of the living room. There's nothing that turns an XYL off Amateur Radio more than untidy radio gear all over the house.

Actually getting a licence will, in most cases, be a bit beyond the normal XYL who has forgotten any maths she ever had and with a home and family to cope with, can't afford the enormous amount of time and study necessary. But it's really not essential for her to be licensed. Encourage her to enjoy your hobby together, but make sure she feels it's her hobby too.

Oh, and remember, there are other things in the world besides Amateur Radio! Don't forget to take her out sometimes to places where she likes to go, even if it happens to be to the ballet or the theatre, and the thought of it nearly kills you; just make sure you don't kill her with an overdose of Amateur Radio.

Well there it is Einstein, go to it and good luck!

S.W.L. SECTION*

Once again I begin my monthly groch. No doubt you will guess what it's about. You're so right! Lack of contentment. If you do see these notes it will only be because of the Editor's kindness (fine chap I might add) as they are supposed to be in by the 4th of the month. We've held off until now, but alas, no mail today either, and only one letter received before this. So come on now chaps, if you're not a social snail, and you have no interest in this page, or else! Or else well have to give it up, see! Now after this dire straits, we, we will proceed to my next complaint.

You may have noticed that last month I said things had almost become normal now. Well they haven't, but I'm going to keep it that way. My trouble is that when I'm ready to do a bit of listening in the evening the new hardware isn't working, or the power supply is going to sleep or awake and has to be watched or nursed or something. No evening's s.w.l'ing is therefore forthcoming. Secondly, early in the morning she doesn't wake up anyway. OK you reckon! Well that means that I don't get out of bed early and listen then either. As a result I am currently not hearing anything much at all.

VICTORIA

June Group Meeting.—This meeting was well attended and an interesting program was presented. The first portion of the meeting was devoted to a discussion of future activities. Many good ideas were put forward and arrangements made for various visits to places of interest. The time was then spent discussing a receiver building project for the Group. It was decided that two small table top regenerative receivers would be built. A donation of a disposals v.h.f. rx from Group 3WJ and an old superheterodyne rx from the Victorian Division has provided a good supply of parts to allow work to be commenced.

Future Programme.—A visit to the Newport Power Station has been arranged for the 15th August. As this is a day when the weather will be along has to be known, anyone who wishes to attend is requested to ring the Group Secretary, Ian Hunt at FB0861, Ext. 311, no later than the 7th August.

Visit to TV Station HSV7.—This visit will be held on 22 September. Again a number of members have expressed a wish to go along has to be known, anyone who wishes to attend is requested to ring the Group Secretary. Preference will be given to those who put their names down for the QTV visit, which, unfortunately has to be cancelled.

August Group Meeting.—This will be our annual meeting and section office-bearers for the next 12 months. So come along and we'll find a job for you. At this meeting we will be entertained by Noel 3ANS, who will show us films on the home and also some shots taken during the Group visit to D.C.A. at Essendon Airport. More arrangements are being made for interesting talks and also some keep your eye on this column and listen to the 3WJ Sunday broadcasts for further announcements.

SOUTH AUSTRALIA

John Campbell, WIA-15611, tells us more of the June Group meeting. Normal business was suspended to allow members to visit broadcast station SDN. Arriving at the studios in North Adelaide, the members found Jim FPA who they thought had probably become lost or something, but had instead gone there direct. They look over the premises, find most interesting and then they went out to Dry Creek to examine the tx. The degree of automatic operation surprised everyone as no engineer is on duty at the tx and even the air conditioning plant can be turned off and on by a telephonic circuit from the studio.

Many thanks are due to Warwick BPS for arranging this outing for the S.W.L. Group. John mentions something about the "best broadcasting station in the State, I believe" that for someone else to fight out. John also tells me that he has now 110 countries verified—the latest card coming from Radio Tahiti. Of the 110 countries about 25 have been verified on the Ham bands.

Well chaps, this brings the notes to an end again for another month and if I don't receive some mail soon, probably to an end. Why not send me enough information about yourself to allow me to write you up as S.W.L. of the Month and help me continue this feature. I haven't the time to run around Melbourne interviewing chaps all the time I'm afraid, and besides, it's cold weather now. So I'll get next month I'll say cheerio to all and begin watching for the postman.

* Compiled by Ian J. Hunt, WIA-13007, 211 St George's Road, Northcote, N.16, Vic.

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EMERGENCY NETWORKS

Editor "A.R.", Dear Sir,

It would be wrong to detract from the commonsense and experience apparent in much that VK5EC has said. One does not need to be a "fanatic," however, to detect in his remarks about telegraphy a fallacy which is usually based upon inexperience.

In some 20 years of work on communication circuits which have required proficiency in both modes of transmission, it has seemed to me that the following could be stated as a general rule: In case of operational urgency, provided it is possible to give a good circuit directly between the people whose job it is to act upon information exchanged, telephony is the obvious choice. But the ship's master, the aircraft pilot and the doctor can be busy people in an emergency. Now, with intermediate parties involved, accuracy usually demands that information be recorded together with evidence of its origin. And for both speed and accuracy in this, the use of the hand-typed telegraph can "clear the hook" while the poor old talker is still trundling along with phonetics. To pluck the matter at its lowest, it does not take much effort to cultivate the slow, steady morse with which an out-station can still communicate in conditions which are usually used.

It is interesting to note that a recent job of evaluation by the U.S. Navy produced conclusions rather different from those stated. Instances like the sad and potentially dangerous antics of the Army net observed by VK5EC are unfortunately common. But if they illustrate a need for different equipment they also serve to show that no equipment and no organisation can be better than its operators. A resourceful type 1 once knew tramped for some weeks and announced that he had been called, he had given his only crystal a good rub in river sand! And it will take me some time to get the message to the operator who has the rest of the net for the fact that his own carrier was running. . . .

By all means let us study Service examples and learn to benefit from them. But as Amateurs we need also, I suggest, to evaluate for ourselves (not evaluate in advance) the skills that people can be trained to employ for the use of the Service net. The difference between A and B, using a reasonable minimum of power and equipment in which both make the same use of the net, will be the difference between A and B. It will not be the difference between some assumed necessities that can be done without. We can only guess at the nature, let alone the magnitude, of emergencies that could beset us. Let us leave the guesswork to that department.

—W. W. Watson, VK7YY.

Editor "A.R.", Dear Sir,

The letter by VK5EC in the July issue of "Amateur Radio" prompts me to continue this discussion on Emergency Networks.

I am in complete agreement with all the points expressed by the writer, particularly in regard to the use of equipment. The use of emergency service there is absolutely no room for equipment which is not 100% stable, 100% efficient, 100% reliable and maintained ready for all time for immediate use. One who, on being called to an emergency, has to race around with odd bits of wire and a scattering of iron before his equipment is put into operation is a liability to the emergency service. Neither can the use of anything but the best in commercial, ex-service, or home constructed equipment be expected to inspire confidence in the minds of the authorities, and all those connected with an emergency operation.

In connection with the proper set-up for Emergency Stations, several points come to mind. For instance, how many Base Stations, or proposed Base Stations, particularly those in City Areas, would be able to carry out their duties and operate full power if the a.c. power lines were put out of action? How many of these stations have or can have made provision for connection to emergency power plants? How many Base Stations have telephone connections to the operating room? This is essential.

For operation in the field, are there any stations, with portable power plants, which could operate full power for a considerable time at an isolated base? Battery charging facilities may not be available, and conditions generally require maximum power for effective communication.

For mobile operation all equipment, both transmitting and receiving, should be xtal controlled. Xtal control is important for all equipment used in emergency networks, but is particularly necessary for mobile use. Admittedly there is some quite good mobile gear in use which does not incorporate xtal control in the receiver, but it would be all the better for it. If xtal control is not available in the receiver, facilities for netting to the transmitter frequency are essential. Dial locks would also be advantageous.

Portable equipment of the "Handle-Talkie" type appears to be receiving some attention, both on h.f. and v.h.f. This equipment should be of a standard similar to all other gear. VK5EC's remarks should be carefully noted!

It may be argued that some of the suggestions made above are unnecessary and extravagant. However, of these ideas, which should definitely be considered necessary in an efficient Emergency Network, are due to particular deficiencies which have been noted in work with another emergency organisation. It may also be argued that the cost is far too heavy for the average Amateur, and if such equipment is necessary, Amateur participation would be limited to the favoured few. I would suggest that any Amateur in Emergency Service should first decide his capabilities, and then direct his activities to those which are most important thing is that no matter whether the choice be Fixed or Portable Base Station, Mobile or Portable, the Amateur should make himself proficient in this field, and provide and maintain suitable gear of the highest standard.

Regarding emergency operation generally, it might be well to remind Amateurs, particularly metropolitan Amateurs, that in Victoria there is already a State-wide voluntary emergency organisation which is reasonably well set up and operates fairly efficiently.

This organisation is concerned mainly with bush-fire emergency work. During the summer season operators are on call continuously and maintain daily "skeds". For the remainder of the year most Regions hold weekly or bi-weekly "skeds" in order to maintain their equipment at full efficiency. These operators would no doubt be very willing, and would probably expect, to assist in any other type of emergency. Therefore in order to avoid confusion and unnecessary duplication of equipment and personnel the setting up of effective and reliable liaison between emergency organisations should be of paramount importance. One wonders, too, what the attitude of this, or any other emergency network is, toward an Amateur C.O.E.N. and vice-versa.

I trust that this letter will encourage further discussion on this matter.

—James R. Barber, VK3ABT.

D.S.B. VERSUS S.S.B.

Editor "A.R.", Dear Sir,

I take exception to the article in "A.R." July 57, "Single Sideband is it better than Amplitude Modulation".

I feel that W2CR has misrepresented facts and in the case of signal-to-noise ratio, justified his mathematics to achieve his desired

results. May I give my version of signal-to-noise ratio and criticize other aspects of the article.

In the case of receiving a 100w, s.s.b. signal on a receiver of 3 Kc. bandwidth the signal-to-noise ratio will be 100 divided by 3.

In the case of receiving a 100w, d.s.b. signal on a receiver of 3 Kc. bandwidth the signal-to-noise ratio will be 50 divided by 3.

In the case of receiving a s.s.b. signal on a receiver of 6 Kc. bandwidth the signal-to-noise ratio will be 100 divided by 6.

In the case of receiving a s.s.b. signal on a receiver of 6 Kc. bandwidth the signal-to-noise ratio will be 100 divided by 6.

This indicates that where the receiver bandwidth is chosen to suit the signal being received, i.e. 3 Kc. for s.s.b. and 6 Kc. for d.s.b. there is a 3 db. advantage to s.s.b.

W2CR points out that the main disadvantage of receiving d.s.b. is the phase requirements of the reinserted carrier. This is also, incidentally is the reason why s.s.b. signals with poor sideband suppression are so hard to tune in some receivers. He then mentions phase locking circuits but apparently suggests that they are so simple as to warrant no further mention. But rather suggests we go over to a.s.b. reception of the d.s.b. signal. This is in effect throwing away 3 db. which by his peculiar brand of reasoning he tells us is not needed because it is therefore needed.

He later mentions d.s.b. adaptors for the receiver and tells us that they are beyond the scope of his present article, having in a previous paragraph dismissed phase locking circuits in favour of s.s.b. reception.

His remarks on average QRM on a Ham band being the same for s.s.b. or d.s.b. seem to have completely overlooked the fact that this would be a consideration, only if the receiver was simultaneously receiving a spectrum as wide as the Ham band in question. As a practical receiver receives only 3 to 10 Kc. at a time the average QRM is not important so much as the instantaneous QRM on the frequency the receiver is tuned to.

Of his three points in conclusion, I would suggest that point 1 should read—s.s.b. has a 3 db. advantage over d.s.b. (suppressed carrier) point 2, s.s.b. will reduce QRM; point 3, while s.s.b. is more difficult to generate than d.s.b., its difficulty is severely over-rated.

I feel that I should point out the difference in receiving a good s.s.b. signal and a good d.s.b. suppressed carrier signal.

In receiving s.s.b. the reinserted carrier at the receiver must be reinserted at least within 50 cycles of the correct frequency.

In receiving d.s.b. the carrier must be reinserted within 10 cycles of the correct frequency, and must have the correct phase relationship to the sidebands.

In the alternate case of receiving d.s.b. on a s.s.b. receiver the frequency is not so intolerant and the phase requirement is no longer necessary. BUT the receiver must be capable of rejecting the unwanted sideband by at least 25-30 db.

No doubt s.s.b. versus d.s.b. or a.m. will serve good purpose in airing points of view and ideas, but may I suggest that nothing but harm will be done by any cause by distortion of facts and attempts to achieve certain preconceived conclusions.

—Cyril Edmonds, VK3AE, s.s.b.

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DX ACTIVITY BY VK2OL†

3.5, 7 and 28 Mc. have not produced much interest to the DX fraternity of late and 14 Mc. not showing much activity after about 1100z in the Eastern States. Due to my own inactivity my knowledge of conditions is limited.

NEWS AND NOTES

The **3WAA** QSL position is still confused. I had a long talk with Phan and he said he gets no QSLs via Saigon and only 30% via Canton. His new avenue is via Box 69, Praha, the OK QSL box, and OKIFF is doing the honors, so far quite successfully. Phan has tried sending cards outwards via the VSI Bureau, WX8AB, but is doubtful if they have reached their destination. I suggest that if you have not yet received a card from 3W8AA, try another from the OKIFF route. Phan waits until he gets your QSLs before sending one.

VK0AB finds that 3.5 and 7 Mc. are of no use at the present time in Antarctica.

ZD4 contacts after Mar 5, '57, will count for Ghana. Prior to that date will count for Gold Coast. So—two countries for the same geographical location (2ACX).

The Saar (9S4) after April 1, '57, is not a separate country but counts as Germany (2ACX).

Trieste contacts after April '57 will count as Italy (2ACX).

FW8AA can usually be found on the rare occasions he is not frightened off by the "dog pile" round 14310 Kc. (2AGH)

UA00M is in the news again. QSOed at the end of the month he gave a QTH indicating he is in Zone 23 (2AGH).

VQ9HAY, Seychelles, maintains a sked each Sunday at 1300z with **VQ4AO** on 14 Mc. phone. He is reported to be staying on the island for a couple of months (5WQ).

JA1JG is located in the Antarctic area (BERS195).

VK2EG claims he has applied for the first Antarctic DX C.C. for his operations as VK1EG. Bill finds even he has difficulty collecting cards for his DX C.C.

For those interested in working the YL/XYLs, **IISGZ** can be added to the list (4EL).

ACTIVITIES

3.5 Me.: 6EJ: DU7SV*, VS1GX*, 3W8AA*.
7 Me.: 2AGH: VR2DA*. 2AMB: PY2BQM*
VETARY*, VK0CS*, UHSKAA. 2QL: FK8AT*
KG6*, UB, UAI, UOOSCA. Rod de Balfour
ZD6DT 58 at 2300z, KH8, KR8AQ. BERN8195
FK8AT, JAI0AH, KL7, KZ3BB, KR8AK, PY-
TYS. VK0AB. UAIKAE. ZLSAA.

13. VORL. 000000Z JUL84
FM JCRC
TO: MC. C. 000000Z JUL84
INFO: VETB. 000000Z JUL84
(Deception), VKOJCJ, APQ*, CRCK*, KV-
AA*, ZCSAL, KP4PD*, BVIIUS, GJXJX*,
VQ2NS*, 2ACX: VR8TC*, 2AGH: UA0*,
UA0*, ZLSAA*, VPVZG, UA1KAE, KP4CC*,
VR3F*, VR3G*, ITLZG, KC4USV, KZAA*,
KZAA*, KZAA*, KZAA*, KZAA*,
UJKAJA*, UA2*, KAW, HJ3AP, UAOM*,
2AIR: HC10R, FYTTY*, UA1KAE, VK0AB*,
KCUSA*, KP4CC*, KPWTN, ZCSAL*, VP-
5BL*, 2AMB: VJHJ*, OA4AQ*, TIMZAR*,
46TWP*, VR8TC*, VPQGD, CR4LU, FGXGX, ZS-
KZ, ZSSJ, 34R, VJHJ*, FGXGX, ZS-
4USB, VJHJ*, VJHJ*, VJHJ*, VJHJ*,
2AD, ZD4CM, KGIAF, VPQZD, SY0WE, EM-

† Frank T. Hine, 30 Abbotsford Road, Homebush, N.S.W.
* Call signs and prefixes worked.
z—zero time—G.M.T.

INT. 5WO: FB8XX, ZK2AD, UB3WF, UO-
 5PF, W7FNK, KP6. 7LZ: UJ8KAA, G, H,
 5CL, XEIMB, 7YL: C8EAA, FB8BD, HC-
 7WK, XE1AX, XE1PB, XEIMB, VY4AU,
 LUDEL, C07NR, LUINE, C02SW, BERS-
 195: CX1BO, FB8XX, H2LAC, HL2AJ, LUTEZ,
 KG1AS, PY1FB, VY5HL, VKOAB, VR3G,
 3A2BG, 4X4HK, XK1BG, ZK2AD, 9S4DG, 9XK,
 YN1AA, VY5BX, PZ1AP, H2LAC, FY7FY,
 14 Mc. Phone: 2AHG: HH1HB, CM9AA.

FSFRP, VFSPC, ZAME, VVSEF, VVSBU,
 GSC, LUNR, TSECH, EASCC, ZSSACU,
 FUDAF, GDZFRV, ZHMA, ZTTH,
 FMTWQ, BVUIS, VVSAB, ZHI: GWSPH, CN,
 8DW, VVSAY, VVSBS, ZUWDB, SPAHA,
 EAZIM, 5WO: VVSAY, HKTLX, TG7SJ,
 TG9MQ, VPT4O, IJL: TG7SQ, HP1GD, HH,
 2LD, HKTLX, VVSAY, VVSEC, FUSAD,
 Rod de Balfeur: GDZFRV, 4STYL, KR6QQ,
 KR6AF, BVUIS, FUDAF, FK6AS, KEIFYO,
 8AB, HH1LD, COBOS, TG6AC, HP1GD, HP3FL,
 8AB, HH1LD, COBOS, TG6AC, HP1GD, HP3FL,

21 Me. C.W.: 2AGH: 3W8AA*, YO3ZA*, UB-
5UW*, SP6BG*, VPTNB*, 2AMB: HA5BV*,
UB5AI*, 3W8AA, 2QL: ZS*, VK6AB*, ZS-
3AG*, FF8AJ*, 3W8AA*, CX6CM, FA8RJ, UQ-
2AS, 2YL: DL3YO*.

21 Mc. Phone: 0AB: CR7LU*, F08AC*, UD-
6AI*, CX2CO*, VP8B0*, FB8XX*, ZS*, W*
2AGN: 0A4FE*, DL*, UB5BW*, VP7NB*
2AMB: CN8JX*, CN8GL*, KG5AGO*, VK0CS*
4X4DK*, VS4JT*, IIBT*, IIPAC*, CTIDU*
V88AAT*, F08AT*, F08AT*, F08AT*

HK3CH* ZS6SD HB9HM KR6BN OA4M
HJGHD. 2YL: 4X4BL* 4EL: 1IHH* OK1KAA*
ZSPCE* 4X4HI* OA4H* 1ICCC* VR2BC* V.
4JT* VPSAR* 5WO: OZIK* VP6WR* HS1A*
VS4JT* 7LZ: CR5SP* ZS6SG* ZSDSD*
1IBFS* 1IGFT* VP7NV* VP7NB* VP1EE*
Rod de Balfour: HELAB, EALJH, CNBGL
5A1TG, MP4KAC, ZS6NZ, ZS6BW, VQAQ4
4STYL, BV1US, HS1A, DUTSV, VS4JT, FKRAK
VKOAB, VKO CJ, CR5SP, VP1EE, VP5EM, HH-
3DL, VP7NB, VP7NV, VP2AD, HF3FL, T1ZEO
T1ZQA, HCLU, CEWI A-also, Net Red

28. Mc. Phone: 4XJ: W, KHG, ZS4PB*, ZS-
1B*, ZS6APA*, ZS6ZF*, ZS6SO*, ZS6A1A*,
ZS5MP*, ZS5NZ*, ZEK1L*, ZEMJ*, VQ2NA*,
OQ5RU*, OQ5EU*, CO5JK*, VP1EE*, SWO:
ZS8OQ*, ZS5CU*, ZS6A1A*, ZEEJ*, ZS5NZ*,
GDPQ. 7LZ: ZS6UR*, VQ2*. Rod de Balfour:
48TYL, ZS4HW, ZS5NZ, ZS2OV, ZS6UR, XE-
1PY, HP1GD, VR2BC, FK8AC, KI.1.

QSL SITUATION

2ACX has received cards from OH3AA/GHO and CEDAAC. 2AIR: HIBBE, AP2RH, CEDAAC 3WSAA (7, 14 and 21 Mc), 2QL: HIBBE, 3WSAA (7, 14 and 21 Mc), 1UEKAA, 1UEKAA, 1Z-1KNB, 5WO: VECOMP/VO, ZS9F, ZSWF, VESAD, 1LZ: HH1HB, VK0AB, FM1WR, G6FQ, G2P2C, VSJAT, VR3F, HK3AA, EALJH, BERS19S: CX2AM, EA8BP, EA9BK, FK1AT, 1S1FIC, KW6CM, OQ5BB, UA6AF, UA6CD, Y06AL, ZC4AM, ZDSRM, 3V8AO, Rod de Bal- de: CR5SP, ET2US, 0XK: UC2AA, GDJUB OY7ML.

QTHS OF INTERES

VP7NB-C/O. A.A.F.B., via Palrich A.F.B.
Florida (2AGH).
MS1A-QSL via W6FKH.
VP9CS is W4SSN.
HK7LX-Bucaramanga, Colombia (5WO).
V89AD-Sgts. Mess, R.A.F., Aden (5WO).
ZD2WAF-"Red" Fenton, C/o Nigerian Broad-
casting Service, Lagos, Nigeria (5WO).
W7FNK/KP6-Via KH6 Bureau.

By the good graces of the Magazine Committee, I have received a copy of the late American Call Book (and the VK). Each month when somebody lists one of the lesser heard calls, if the call is in the book, I propose to list it in this part of the notes. Russian stations are not listed. So we commence with—

VR6TC—Via Post Office, Balboa, Canal Zone.
FS7RT—D. R. Tibbets, Bellevue Plantation.
Marigot, French St., Martin, F.W.I.
TG9 Bureau—P.O. Box 12, Guatemala City.

SPECIAL FOR THE V.H.F. DX'ERS

VK9XX has a daily call on m.c.w. on 56016 Mc. at 0915z and hoping to get a QSO with the mainland.

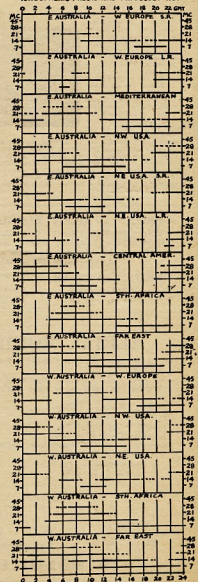
And once more my thanks to **9AB** who has come closer to his goal with 93 countries. **2ACX** with the fine total of 254 worked, **2AGB** who is chasing the DX a little more these days, **2AIR** on the air again and finding the new QTH to his satisfaction, **2AMB** complaining about the "bad" weather, **2GSI** who is on the shake, **4EL** with his **GSZA** contacts new number, **73**, **4XJ** who hopes for better conditions during the winter, **5A** who is working hard for all continents soon on 28 Mc., **5RK** (**QSG** **5HI**) in the throes of re-building and like **5HI** somewhat inactive, **5WO** also on the inactive list, **6A** who is still working on his DX list, **6B** due to fix trouble and **6PRL** been heard since

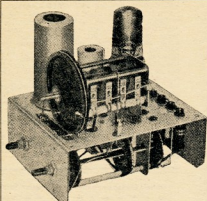
Red de Balfour finding 21 Mc. the best band at present, and **BERS195** who received the grand total of 80 QSLs for the month. Continued good hunting you old?? stalwarts.

I feel that the time is now due for some rationalisation of the method of counting "DX" countries." There are a number of anomalies these days, one being that mentioned in the early part of these notes regarding Ghana. There is a difference of opinion as to whether between "CG" magazine and the A.R.R.L. My thoughts are, whether practical or not I am not in a position to say, that it should be the prerogative of this I.A.R.U. to recognise a list of countries for printing recognition in their country for legitimate purposes. SWA, for example, cannot be counted for A.R.R.L. DXCC solely by reason of the restriction that U.S. Hans cannot work them, but we can count what are your thoughts? Let's start something.

3YL and 9XK managed to get in under the slip rails, Russ with the interesting info for the DX on v.h.f. band. 2YL has found 14 Mc. the best band.

IONOSPHERIC PREDICTIONS FOR AUGUST 1957





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The variable frequency oscillator that Geloso have designed for their transmitter type G210-TE is now available as a separate unit. The importance of a stable oscillator in a transmitter is well known to Hams, for on it depends the stability of the transmitted signal which is a very necessary requirement of all transmitting stations. In order to obtain such stability one may resort to the use of multiple quartz crystals, but it is easier, cheaper and more convenient to use a Variable Frequency Oscillator. This oscillator also provides a means of quick frequency changing to any part of any Amateur band so as to avoid interference, etc. Amongst the types of circuits available for Variable Frequency Oscillators, the best known is possibly the "Clapp," and this is employed in the GELOSO SIGNAL SHIFTER.



GERMAN CERAMIC PI-COUPLER SWITCH

2 Pole 6 Position 2 Bank. Can also be used for other r.f. switching purposes where the switch sequence is suitable. Rated for 2,000 volts at 2 amps.
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Few only L333 Ceramic Dipole "T" Insulators, 8/6 ea.
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Beehive Stand-Off Insulators, suitable for 10, 15, or 20 metre beam arrays:
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Few only, "Labgear" Wideband Couplers, 3.5-3.8 Mc. 31/6 each
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Eddystone Silver Plated V.H.F. Coils 3/- each
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Davesnet 2, 6 or 12v. Battery Trickle Charger, £6/9/6
Eddystone R.F. Insulating Shafts. Ideal where voltage is applied to condenser rotors and stators 1/9
Z969 Chokes, die cast cased, 25 hen. 80 Ma., 500 ohms D.C. resistance 35/- each
Z956 Chokes, 30 hen. 200 Ma., 160 ohms D.C. resistance 1,000 volts insulation £3/10/- each
Few only, OT796 Plate-to-Line Transformers, 30w., ideal remote audio installations. Prim.: 5600 c.t. and 3500 c.t.; Sec.: Com. 100-125-167-250 ohms, £4/5/-
AT1204-11 240v.-110v. Auto Transformers, 100 va. £3/15/- each
14CS Carbon Press-to-Talk Hand Mikes. As used by Taxi Radio and Fire Fighting Services, £4/10/- each
American G.E. Miniature Fluorescent Tubes, perfect R.F. Indicators:
110v. G.E. 6w., 9 inches long 11/- each
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"WODEN" MINIATURE MICROPHONE TRANSFORMERS

Excellent for compact Mobile or Portable equipment. One hole mounting provides for simple hum balancing when used near a.c. fields. Ratio 50:1 overall.
Type MT101A Mu-Metal screened, £3/14/6 each.

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Features—

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- ★ Universal application.
- ★ Primary impedance range: 2,000 to 18,000 ohms.
- ★ Secondary impedance range: 200 to 21,000 ohms.
- ★ Highest efficiency—lowest weight per watt.
- ★ Easy to solder heavily silver plated tags.
- ★ Above or below chassis wiring.
- ★ Capacity: 30 to 250 watts.

List No.	Audio Watts	Max. Sec. Watts	RF In. Current	Overall Size			Weight lb. oz.
				L.	W.	H.	
UM1	30	60	120 Ma.	3½ x 3½ x 3½			5 8
UM2	60	120	200 Ma.	5½ x 4½ x 5½			11 8
UM3	120	240	250 Ma.	5½ x 5½ x 5½			14 8

Price: UM1 £7/9/9 inc. Sales Tax
UM2 £10/13/3 " " "
UM3 £12/2/6 " " "

FEDERAL, QSL, and DIVISIONAL NEWS

FEDERAL

RESIGNATION OF VK2 FEDERAL COUNCILLOR

Federal Executive has been notified of the resignation of VK2ASW, Don Durrant from the position of Federal Councillor of the New South Wales Division.

Although Don did not hold this position for a great length of time, he became well known to those outside his own Division because of his frequent journeyings Interstate. Besides this it was during his term of office that he made a trip overseas. Now that he has more time for Radio, it is hoped that the call VK2ASW will be heard regularly on the bands.

AMATEUR STATION AT JUBILEE JAMBORÉE

Federal Executive has been notified by the Boy Scouts Association in England that during the Jubilee Jamboree, Jamboree (August 1 to 12) at Sutton Park, Sutton Coldfield, an Amateur Radio Station under the call of G8SSP will be in operation.

Special facilities have been granted by the British Postmaster-General including permission to radiate a "News Bulletin." This news service will be radiated on various frequencies between 1000 and 2200 hours G.M.T.

As the station will be carrying out the normal radiating activities at other times, the Scouts are looking forward to making contacts with DX stations. They hope by means of special radiations beamed to suit conditions to reach Australia. All interested are asked to listen to the call G8SSP on bands from 3.5 to 30 Mc.

FED. CONTEST COMMITTEE

REMEMBRANCE DAY, 1957

This month, once again, we are celebrating Remembrance Day with the Contest founded to bring friends together, old with young, to honour our Friends who died in Active Service for us all.

Surely a sobering thought, when one recalls that this Day was twelve years ago and that many of our present members were too young to appreciate the joyous relief that we older ones felt when victory was proclaimed.

Federal Council's decision to ask for a period of quietness and an appropriate address from the President of Federal Executive prior to the commencement of the Contest should place the Contest in its right setting—A Memorial.

The checking of the logs last year disclosed that some contestants were not operating "in the true spirit of the Contest."

Surely the greatest joy comes from working with and meeting again as many old friends as possible; from welcoming to our ranks all those whom we have not had the opportunity of meeting before; of giving to our younger generation the feeling of unity that is Amateur Radio; and above all from keeping alive the memory of those who made us, honour, and of whom we may truly say,

Greater love hath no man than this, that a man lay down his life for his friends.

ROSS HULL MEMORIAL CONTEST RULES 1957-58

These have been changed following the discussions which took place at the Federal Convention. The draft has been based on the recommendations of the Federal Council, and on suggestions received per letters from those who have been active v.h.f. participants for many years.

As the 1957-58 period is likely to have conditions which will favour distant contacts of over 1400 miles, your Committee decided to reduce the minimum distance for making awards for meritorious efforts by contestants outside of Australia and its Territories.

Not all the suggestions received were able to be incorporated and the Committee was once again faced with the hard task of making suitable compromises. They follow the standard procedure now adopted.

PLEASE GIVE THESE RULES A FAIR TRY-OUT FROM ALL DIVISIONS.

Copies of the Rules will be sent overseas in time to make sure of some activity there.

G. M. Bowen, VK3XU, Chairman.

FEDERAL AWARDS

W.A.V.E.C.A. AWARD

Latest additions to the list are W3OP, G3AIM, WZFN, CT1P6, JA1AG, JA1ACA, VK3AL, and W3GAD. 50 certificates have been issued to date.

G. Weynton, VK3XU, Awards Manager.

FEDERAL QSL BUREAU

A new world map for Amateurs and S.W.'s, adapted to the latest conditions has been issued in the practical size of 98 x 60 cms., coloured in blue, rose and black. The map contains call sign prefix of each country, as well as all zones. It has many other features. It is printed on first class white paper and was produced by Fritz Luthi, HB9GJ, Kochstr. 3, Zurich 4, Switzerland. It retails for 5 Swiss francs plus postage.

A par in the July issue is already out of date. In deference to the information regarding VK3AJ, Cocos Island. During end of May, VK3AJ was suddenly recalled to the U.K. and left by air eastwards. The map contains has been left at Cocos and it is hoped that there will shortly be another Ham on the air from this location.

Another new or amended certificate is W.A. D.M. (Worked All DM). It is issued by the Central Board of the Society for Sports and Technics, through the DM Contest Bureau, DM2ASB, Postbox 18, Schwyz/Mechel, German Democratic Republic. There are 15 DM districts to contact. As the rules are too lengthy to quote here, full details may be obtained from the Bureau or from the Awards Manager, W.I.A.

The Society for Sports and Technics of the German Democratic Republic has arranged a friendship voyage of the sailing-training ship Wilhelm Pieck during the period 1st May to end of August or beginning of September, 1957. During this voyage an Amateur Radio station will be carried with the call sign DM5MM. The operator is DM2ACB. The cruise will be from Gressowald in the Baltic through the North Sea, the Atlantic, the Mediterranean to the Black Sea. An award styled the Worked 3 Oceans Award (W3O) will be issued from the District Radio Club of Schwerin for the first-named society. Requirements are to contact DM5MM during their passage of at least three of the ocean traverses. For contacts during 4 or 5 oceans, special awards will be issued. Contacts with the vessel while it is in the Straits of Dover, Straits of Gibraltar, the Dardanelles, the Marmora Sea or the Bosporus will be valid for either the ocean just left or the ocean they next reach. For further information contact this Bureau or the Awards Manager, W.I.A.

The Diploma YV3 has apparently been revised, but my lack of knowledge of Spanish prevents me from quoting same. Anyone interested may obtain the required info (in Spanish) from this Bureau or the Awards Manager, W.I.A.

During a long contact with Phan 3W8AA, the QSL situation was discussed at length. Phan states that the Postmaster at Saigon will not handle any letters addressed to him (Phan), and either destroys or returns them. He also queries all QSLs sent via OK1F of the Czech Bureau. Cards from Phan are routed via the same circuit and are coming to hand regularly now.

In a note to BERS195, ex-VS8AS (G3ANK) informed Treb that he expected to reach VK3 in late June and plans to stay a while. The reason for the visit was not stated and it is also not known whether he is still in the R.A.F. or in civvy street.

From January, 1957, Captain Ron Egon, of the Israel Signal Corps, operated as 4X3RE/Sinal, from Sharm-el-Sheikh, during the Israeli occupation of the Sinai Peninsula. He used the 160w. into long wave. He contacted 800 stations in the period including a few VKs. A special QSL card was printed for the occasion.

SILENT KEY

It is with deep regret that we record the passing of:—

VK3JD—Jack Davies.

VK6RT—Len Trunfull.

sion and Capt. Egon requests VK QSLs be sent him care BX 792, Haifa, Israel.

Yet another DX award has come to light. It is issued by W.K.H.S. by the QSL Hager Sendemateurs. Full information may be had from this Bureau or direct to the W.K.H.S. Hager, D.L.I.S., Hermann Zimmerbocker, Hager West, Gutenberg, Germany.

Information has just been received from Stan Chapman, PZ3AE, ex-WHITE, of Aruba, Netherlands West Indies, that the Dutch PZ3AJ who was very well known to VK DXers, had passed away at the end of May after a sudden heart seizure. Stan says he has acquired Don's complete rig and hopes to be on the air frequently and to become as well known and as highly respected in VK as the previous owner of the station.

Ray Jones, VK3RJ, Federal QSL Manager.

NEW SOUTH WALES

The Annual General Meeting of the N.S.W. Division was held at Service House, Gloucester Street, on Friday, 28th June.

This meeting was preceded by a Special General Meeting to consider the adoption of the new constitution of the Division. After several members among the 53 present had spoken on the legality of the proposed method of voting, the Chairman ruled that no vote would be taken and the meeting was over. Those present would not be fair to those who, in good faith, sent in postal votes. The matter was adjourned to a later date.

The Annual Meeting was then opened and after receiving the President's Report and a short discussion on the Balance Sheet, the nominations for the ensuing Council were announced. These were Messrs. B. Godsal, 2ARG; R. Hart, 2HO; M. Sobels 2OT; P. Beale, 2PQ; J. Beard, 2ALJ, and J. Woodward, 2ZAU. As there were only six nominations for the Council, these members were automatically elected.

The notice of motion regarding the restriction to be placed on disposal of the Divisional property at Dural was discussed at length, several members speaking in favour of the motion as it stood would mean that it would be impossible to dispose of the property even if it were in the best interest of the Division to do so. In an attempt to break the deadlock, it would require three-fourths majority of the members voting to carry such a motion was suggested. This motion was eventually carried as the motion by those present.

During general business, matters of Divisional interest were discussed and a hearty vote of thanks to the retiring President, Jim Corbin, for his work in Institute affairs over the years was moved. After several members spoke very highly of the work he had done on members' behalf, the motion was passed with acclamation and the singing of the appropriate chorus.

At the concluding portion of the meeting a statement was made by Jim expressing his thoughts on several matters. The Chairman thanked him for his remarks.

In accordance with the Divisional Constitution, at the first meeting of the new Council, the following office-bearers were elected: President, J. Woodward, 2ZAU; Secretary, First Vice-President, Bob Godsal, 2ARG; Second Vice-President, Roy Hart, 2HO; Secretary, Treasurer, J. Woodward, 2ZAU; Public Relations, J. Beard, 2ALJ; Educational, Max Sobels, 2OT. The seventh member of Council has not yet been co-opted, and has Treasurer been nominated. Until this appointment has been made, the retiring Treasurer, V. Cahill, 2VC, has offered to carry on his duties.

At the concluding portion of the new Council to review all administrative functions in the Division including the necessity for the appointment of a paid Junior Manager, the following amount of correspondence and to provide better service to members.

It is proposed to include a technical article in every monthly bulletin. These articles will be on subjects requested by members. Council would be pleased to have your ideas.

The duties of the new Council members are: Bob Godsal, 2ARG, Public Relations Officer; Roy Hart, 2HO, C.D.E.N. Co-ordinator, and Councillor in charge of Dural; Max Sobels, 2OT, Councillor in charge of Technical Articles, etc. Ex officio officers who have been appointed are: Dave Duto, 2HO, Treasurer; J. Woodward, 2ZAU, Engineer; Frank Hine, 2QL, Manager QSL Bureau. Several members have offered their services to assist these officers in carrying out their duties.

HUNTER BRANCH

The June meeting of the Hunter Branch was held at the University of Technology, Tighe Hill, on the second Friday of the month. A fair gathering of members were present with Lionel ACS as Chairman, Treasurer Bill 2XT and Zone Correspondent Les 2ACR were absent at the VK4 Palm Beach Convention.

At the VK4 Convention, with Bill using his mobile rig and Les acting as log keeper, the boys won the All-States Scramble with a score of 19 contacts, and again on the following day won the "Bob Campbell" Memorial Contest with a score of 38 contacts. Bill and Les thank all Hunter Branch stations who exchanged reports with them during the contests.

Varley 2SF is very pleased with results from a new monitor using two xtal diodes. 2CN avoiding possible strife in future by getting VL interested and training her as a 2nd op. move move move. The new harmonic monitor has prevented John 2XQ from working a bit of DX on 20 mc c.w. Bob 2AQR at "Westie" and Bill 2ZL at "Phenyle" Bay are helping to make life happier for a blind Ham 2AHL by keeping regular skeds. "Pop" is an ex-Newcastrian and would be pleased to QSO local Ham. Nil heard of Les 2FP on 10 mc, so hope all will be well with the old boy.

Associate Sid Daniels spent few days at Coffs Harbour and "Do Mc" with that friend and all Ham. Cried 2XG the subject was photography of course (blondes mostly), but found time for a 46 mc phone/c.w. QSO with 2ASJ who got his foot key off 14 Mc. especially during the occasion. 2AMM has been transferred at work to near his home at Maitland, so Bill hopes to use time saved in getting his rig on air again. Postal authorities seem to think 2ASJ only Ham in Newcastle as all QSL

cards, etc., not fully addressed go to Ron, hi Ron Bishop 2WB, has returned to G land and leaves his 2WB with thanks to all those in the district who assisted him with gear to get on the air.

On the last Wednesday of the month a meeting was held at Bill 2XT's place of business and the programme for the Blackalls' Field Day to be held on October 5 and 6 was decided. The programme for the benefit of interested members is printed elsewhere in this issue.

SOUTH WESTERN ZONE

The preliminary meeting on 9th June at Coolamon to arrange this year's Convention, to be held at Coolamon, was very well attended by the district: 2PL, 2AXD, 2ACS, 2ZOM, 2ZCJ, 2RS, 2ZAA, 2PN, 2AJO, 2ASos, J. Ashley, L. Ashton, O. Clether, R. Grieves, I. McMahon, L. Abbey, O. Bested. It was decided to hold the Convention on 28th and 29th October, 1957.

The Griffith gang (10 in all) invaded Coolamon on the Saturday afternoon prior to the meeting, and on that evening your scribe had to sit 14 inside the shack; the walls have just started to come back upright again; must be the rain. All the rain came on the Saturday evening, but unfortunately was taken ill on Sunday and could not attend the meeting. However, your scribe has been the transmitting oil from Griffith, AIF.

Have had a couple of visits lately from Lyn 2AQE, who is having a re-build, also going mobile, and Eric 2YU who is again working. Arnl, Stan, Jock and your scribe a real rag was had. Les 3ZCN from Ballarat, spent the last week of the time on guided at Coolamon; much gear was re-built and re-hashed, so it looks as if 2AJO will be on 56 Mc. as soon as a beam is erected. That 3ZCN bloke is a real arm-twister. Les was also given the job as Class Instructor on the Tuesday night at Coolamon. Jock and Stan say their heads are still buzzing.

COALFIELDS AND LAKES

Still very little to report from this area. Geoff 2YU from Singleton is active, as well as Eric 2YU, who is working. Alex 2XG was telling me in person that he gets on 14 Mc. these days but does not burn midnight oil now and then. Les 2AC is also active with on 14 Mc. phone and talking of 144 Mc. working. 2YL working 7, 14 and 21 Mc. when time permits and hoping to get going mobile before long.

VICTORIA

The July meeting was held at the usual place, usual time, after one of the coldest days we have had for some years. Needless to say the night was very dry and the attendance suffered accordingly. However, the Radio Theatre was at a very comfortable temperature and the business of the night was not detracted from.

Following the usual preliminaries the lecturer, Squadron-Leader While, was introduced to the meeting. 2BY the President of the Institute then proceeded to enlighten us on the intricacies of "Ground Control Apparatus." In brief this is a method used by the A.A.F. of talking its pilots down to a safe landing through conditions which would not permit of a normal landing. Quite obviously this is of inestimable value in times of war, and a plan can be used to meet the enemy in almost any weather, and thus eliminate the advantage that the enemy would otherwise have.

As it is to be expected the equipment is very complex and exceedingly expensive, but for all that it is not a scientist's playing, but a very accurate and utilitarian set of equipment.

In the Services, the equipment is made mobile to enable rapid movement between air strips, and is in fact as mobile as a motor car. It can be set up at a strip and be ready for action well within half an hour. The advantages of this are, of course, that the one unit can be moved rapidly from place to place to suit the weather, or the movements of war. Costs are also kept to a minimum.

As far as the civilian service is concerned this equipment has its greatest benefit in the fact that, as its name implies, the system is a ground control and functions with ground equipment only, instructions being given to the pilot through normal telecommunication equipment. This means that the system is operable without the addition of equipment to the aircraft, and in the case of fighter aircraft, which are already crammed with apparatus, is the only practicable system.

As it is to be expected, the system is based on the principle of radar. That is, an extremely short pulse of radio energy is broadcast and the echoes reflected to the receiver. Objects are presented on a cathode ray tube for

interpretation and appropriate action by a control officer.

In the early stages of development after the last war, it took six operators to handle the equipment, but today the same function is carried out by one man. By virtue of this simplification, it is now possible in the latest equipment for three operators to bring planes into a strip in less than 20 seconds. The need arises to bring planes in two at a time, one on each side of the strip. This is a particularly valuable feature for fighter control.

Following the introductory address on the principles of the equipment, a film showing how the equipment functions and is set up, and an actual demonstration of the equipment in action then followed.

Finally, the lecturer covered the technicalities of the equipment in greater detail, and answered a number of questions.

In principle, all aircraft within a given radius of the airfield are displayed on a P.P.I. (Plan Position Indicator) tube. The information for this tube is gathered from a continuous rotary aerial which sends out pulses and receives echoes through 360 degrees of travel. The time base on the P.P.I. tube is triggered by the tx pulses, and follows the direction of the antenna and appears on the P.P.I. tube as a series of dots. The intensity of the dots on this line as dots and through the persistency of the screen material, these dots appear as continuous spots or areas of light depending on the distance of the target. If the object is moving the dots move also and to avoid the confusion which arises when the dots move through the screen, the P.P.I. tube of the equipment has been designed to eliminate all echoes from fixed objects such as hills, buildings or the like and only show moving objects.

To talk an aircraft down from a number in flight it is necessary first to identify the craft from the ground so that the necessary landing instructions may then be given. To do this the ground operator calls a particular aircraft; as soon as this aircraft replies it is automatically d.f.d. and its direction shown on the P.P.I. tube. As the line of sight is identified the plane on the P.P.I. tube, the operator can then issue homing instructions without further delay.

As the plane approaches the airstrip other more sensitive equipment, which gives very accurate information as to the height of the plane, is used. It is interesting to note that into play. From this information the pilot is directed to bring his plane along a predetermined glide path which will bring him to position where a visual landing is possible.

Many thanks are due to Squadron-Leader While for a very interesting night.

The lecturer at the next meeting is to be held at the usual place on 7th August is Graham 3ZAA and his subject: "The Construction of a Television Receiver from Disposals Equipment."

New members admitted—Full Members: G. J. Jenkinson, D. Hull; Associates: G. J. McDonald, R. J. Abell, and H. L. Meyer.

We are happy to advise that Phyl Moncur OXVL of 3LNI and Betty Cuthbert are both now members. Phyl has been kept on the run by Len for a long while, but we were surprised to find it was for golf and not running that the award was made. The joke is that Phyl has more time to spend on the golf than radio. Ham golfers please note. Congrats, Phyl.

80 METRE TRANSMITTER HUNT

The 80 metre tx hunt was held on Sunday, 16th June last, and was a very successful one. The tx was hidden on this occasion by Len

OBITUARY

JACK DAVIES, VK3JD

It was with great regret that the Victorian members of the Institute learned the death of Jack Davies, VK3JD, at the age of 46 years. He passed away very suddenly from a heart seizure. He will be well remembered by those who in 20 years ago a young man who recognised him as the leading DX phone man in VK; he was the first Victorian member of the Institute.

Jack worked very hard for the Institute during the Models Exhibitions, taking charge of all low frequency transmissions. With much of his spare time he was devoting interest in Amateur Radio, operating the controls of the remote receivers. Jack made out of the life of the outstanding ones at the Exhibition.

He made Radio both his work and his hobby and his wide technical knowledge was ready to help anyone to both older and newcomer alike.

The Institute extends sincere sympathy to his wife and three children.

WIRELESS INSTITUTE OF AUS. HUNTER BRANCH, N.S.W. DIV.

SIXTH ANNUAL
FIELD DAY
BLACKALLS PARK
SATURDAY AND SUNDAY,
5th and 6th OCTOBER, 1957

★

PROGRAMME.

Saturday Afternoon, 5th Oct.—
3.30-4.30 p.m.—Heats of the 144 Mc. Blindfold Tx Hunt.
4.30-5.30 p.m.—Technical Lecture.
5.30-6.30 p.m.—Tea.
6.30-7.30 p.m.—144 Mc. Hidden Tx Hunt.
7.30-10.30 p.m.—Films.

Sunday, 6th Oct.—
9.0-11.0 a.m.—144 Mc. Hidden Tx Hunt.
11.0-1.30 a.m.—Registration and VK2V1 Broadcast.
1.30 a.m.-12.30 p.m.—7 Mc. Scramble.
12.30-1.30 p.m.—Lunch.
1.30-3.0 p.m.—Heats and Final of the 144 Mc. Blindfold Tx Hunt.
3.0-4.0 p.m.—All-Band Scramble.
4.0-5.0 p.m.—OMs' Races.
5.0 p.m.—Prize Giving.

★

During Sunday, Races and Competitions will be conducted for the XYLS, YLs and Jnr. op's.

Speed Boat Trips for junior ops. on Sunday afternoon.
Prize for the best fish caught on Sunday between 9.0 a.m. and 4.30 p.m.

Boiling water available free.
Registration: 12/6 OMs, 2/6 XYLS, Junior ops. free.

3LN and was located near the ford of the Maribyrnong River, a distance of approx. four miles from the G.P.O. Although the signal was weak in at the starting point, Tom 3AOG and Maurice 3MS, arrived on the hill at the site within 20 minutes, but another hour and 40 minutes passed before they located the exact spot. The tx was buried in a steel earthed box and the fox was found under the ground with a co-ax line going underground to a box torn bushes with the signal going above the hill and then to the hill. Tom and Maurice started digging the hill and the hill-pettors, who had been wandering around in the vicinity for some time, arrived on the location simultaneously to see Tom and Maurice dig the tx up.

The next tx hunt will be held on Sunday, 4th August. The winners, Tom 3AOG and Maurice 3MS, will be taking the tx home along and bring the family and friends and a picnic afternoon tea and join in the hunt.

EASTERN ZONE CONVENTION

The Eastern Zone Convention, held at Moe, on June 23 and 24, went off very successfully indeed. The dinner, prepared by the Methodist Ladies' Guild, was enjoyed by the 38 who sat down for it, including four Melbourne visitors and their wives, and Councillor Gregory. After the enjoyable dinner and the tea, the women folk departed to the picture theatre, whilst the OMs got down to business, electing the main Ian 3AAAV as President; George 3ZCG, Vice-President; David 3DY, Secretary and Treasurer; Graham 3QZ, Zone Organizer; Cliff 3AIT, Official Zone Station and call station for the Sunday night Eastern Zone Hook-up on 80 mc. A lot was discussed in the few hours, such as future activities, C.D.E.N., etc., before the YLs and XYLs returned, and supper put on.

On Sunday morning a 2 and 80 mc hook up hunt was held. There was no entries for the 80 mc section, but quite a few joined in the 2 mc hunt, which was found by 3ZAT, planted in the hills at the back of Hernes Oak with many roads around and to it. Second was 3AOG and third place went to 3LN. After lunch at Telray, Moe, the 2 mc fox hunt was put on for young and old, the visitors without rx's went with the bounds or followed them on foot, and the 2 mc fox hunt was in the countryside, as well as joining in the fun of fox hunting, and once again 3LN put on a very good show, which we thank him greatly for, and I believe everybody enjoyed themselves. At one stage, Jack 3AJK stopped and asked a farmer who was feeding his cattle near the roadside had he seen a yellow Zephyr, but got no where, as the farmer's only reply was "What! Have I seen your yellow heifer?" George 3ZCG was the winner of the fox hunt.

The Eastern Zone boys decided to hold a fox hunt in Gippsland once a month from now on; it will be held on Sunday afterwards.

After having afternoon tea and inspecting the television aerial assembling line, our Melbourne and Ferntree Gully visitors left for home after a very enjoyable week-end, and looking forward to our next Convention to be held next March at Sale.

NORTH EASTERN ZONE CONVENTION

The North Eastern Zone Annual Convention was held on 12th May as an open-air function on the camping area where Lake Nagambie joins the Goulburn River. Unfortunately only a very small proportion of our members were able to turn up, but quite a large number sent apologies. For some it was a little far, while Des 3CO had to look after the XYLs recovering from severe shock as a result of a motor accident the previous week-end. Associate Jim Harrington had to return home as soon as he had arrived because of illness in the family, and still others again were on duty at their employment that day.

However, 3ASF, 3AGG, 3AL3, 3PF, 3APF, 3CI and Associate Bill Hempel were able to attend. State President, Fred 3YS, and former members, Dick 3DG and Doug 3IJ, of Macquarie Island fame, were visitors. Quite a number of ball and harmonics made up the party. Bruce 3AGG was re-elected President, Des 3CO was re-elected Vice-President, and Andy 3W was re-elected Secretary. Brian 3ASF is now Zone Correspondent, and as a commitment to the excellent job he does, Frank 3ZU was re-appointed in his absence to do the replies to the 3W broadcasts if he can see fit to continue in that capacity.

Zone hook-up time has been changed to 3.7 Mc on Wednesday 2000 hours. This time was chosen at the recent Zone Convention to encourage and stimulate some interest in the Zone, but as the Convention was rather poorly attended, it is not known whether this time will be suitable to most members of this zone.

It has not been possible to collect much news of the members and associates for obvious reasons, but included are some items of news concerning the members near Shepparton. Ray 3BT and 3ALE have been receiving cards from the Bureau for DX contacts which they personally have not had, but apparently pirates have been working their calls on the bands. Ken 3EB is now doing a little quack antenna on 20 mc. Bryan 3ASF has been devoting his time to things other than Amateur Radio, in effect he has recently become engaged. Les 3AL1 is now doing DX contacts with the new gear. John 3ACJ adding to his residence—increasing space.

No communication from Wangaratta and Benalla areas, so how about dropping us a note chaps on your activities until such time as we can talk to you on the new hook-up time and learn something about the doings over your way? Murray 3HZ very busy with the new m.f. station, where, by the way, is situated a very nice high beam tower. Peter 3APF seen about town often; his interest along with Ted 3AOG and Syd 3CI, seems to be centred on t.v. activities. George 3GD heard now and again on 10, 15 and 20 mc by Bruce 3AGG who has been busy modifying his quad appears to be working well by reports received. Well chaps, let's have some news, also not forgetting our associate members 3ASF.

SOUTH WESTERN ZONE

The Geelong Radio Club held its annual meeting this month and the main office bearers resulted as follows: Jim 3AGT, President; Vic Clarke, Treasurer; Keith Vines, Secretary. The ladies' night was quite a success. Noel 3JAN gave us a nice annotated set of convention shots. Bill 3BU showed some colour film and Jim 3ABT showed slides of general interest. The retiring President, Bill 3AWZ, thanked all for their co-operation during the year. An interesting new syllabus has been drawn up and these will be posted to members soon.

There has been no sight of Mart 3AKU, of Colac, since the Convention; we hope all is well. Kevin 3AKH has no time to chase DX (although working some Ws), he is tied up with t.v. preselectors. John 3AGD is using 3J6 with "fantastic results" on t.v. preselectors. Neil 3JG is going in for long yags with t.v. and doing some DX. Jack 3JA is doing well on 41 Mc. DX and John 3ARJ has troubles—the tx will be new.

The Secretary for the Zone hopes soon to have zone minutes available to all members from the Geelong Convention.

WESTERN ZONE

Merv. 3AFO, of Horsham, is at present assembling a stacked beam array on a 40 ft. tower, so when this is completed Merv. expects better signal reports on the higher frequencies. Herb 3AJJ has recently moved into a new residence and having the a.c. power will soon be on the air. His tx consists of Gelofo or trial, switched to either 807 or 813 for 3.5 to 28 Mc. work. V.h.f. rig is VT501, VT501, 2 x 2328 for 56-286 Mc. Modulation still claims on h.f. with a 600 m. a.m. s.b. Rx: modified -RA1B with double conversion covering 380 Kc. to 40 Mc.

Herb is also a keen television enthusiast and has obtained some very good results. Sometimes when conditions are good the reception is as good as it is in Melbourne, however at other times the signal fades and at times is a washout. Antennae in use are yagis, series 3Sombles 144 and 286 Mc., all binder size 286 Mc., on the lower bands at present using XYL's clothes line which is cut for 14 Mc., centre fed.

MIDLAND ZONE

This month's notes start with a timely reminder to all interested that the zone hook-up takes place at 7.30 p.m. on the second and fourth Mondays of each month from 1900 to Ke. Unfortunately most members were conspicuous by their absence during the first two hook-ups in June, some being heard working DX on 20 and on 40 mc.

It was pleasing to hear of the interest shown by St. Arnaud members and Neville 3ACN is arranging to gather them into the fold. Jim 3SV thinks that t.v. might be a little more of a few victims through t.v. or t.v.v. (t.v. viewing) in which case a lot of sympathy will go out from the Bendigo gang where t.v. looks like becoming a problem to a very shorty.

To follow in Dale Carnegie's footsteps, Neville 3ACN is busy working on an all-band t.v.i. proofed a.m., s.b. rig with a heterodyne unit to end all heterodyne verns may turn out to be the little black box the s.b. gang has waited for, but even if it isn't, it still provides a lot of enjoyment and will stop the receipt of QSL cards from t.v. viewers.

Speaking of enjoyment—in large quantities, mainly liquid—Bill 3AMH, who has been semi-resident in Bendigo for some time, was fawelled on Friday, 8th July, prior to leaving for Colac, which is nearly as far as Bendigo from these mighty towers and carpet of wires in Ballarat. Cheers William, and thanks from all for your assistance in the past particularly in the erection of that mast at 3FY's QTH.

Now that 3FY has his new mast holding a CH2U beam 63 ft. in the air through the able assistance of 3ACN, 3AMH and other friends in need, he can recommend the extra 40 ft. for its DX-getting ability. If any one would like information on how not to erect a stamped self-addressed envelope to 3ACN or 3FY will bring a 30 page reply based on very sad experience accepted the hard way.

Rex 3UR has just returned from holidays in Adelaide where, in addition to finding out how VK3s live he probably enjoyed himself. Peter 3APJ is playing with Rothman modulation, but whether success or failure has attended his efforts, we don't know. But it's good to have someone around who has tried these ideas and knows the answers.



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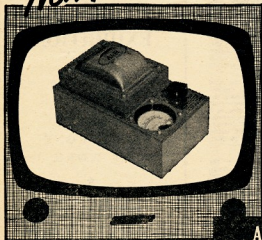
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QUEENSLAND

Since the last general meeting in May the Queensland Division has sailed through a very busy program. Speaking as a participant and observer, I know that everyone who travelled to our Annual Convention at Palm Beach for a reunion. However, referring to last month's Council meetings which was held on 13/6/57, final arrangements were made and all the loose ends were tied up for the Palm Beach Convention which followed on the 15th, 16th and 17th June.

On behalf of Council and all the fellows who enjoyed themselves at the Convention, I would like to pass on this note of appreciation to a tip-top job of organising by Aussie 4TN.

At the Council meeting, Paul 4UJ presented his resignation as Federal Councillor. Unfortunately transfer to another State and "come off the few" and concluded a pleasant association with many VK4 boys. Too bad we had to lose you, Paul, but all the best in your new life. The Council members appreciated your companionship as well as the services you willingly rendered to this Division. Well that leaves a vacancy on Council. As a majority of Council members already serve on one or more other W.I.A. committees, it would be truly appreciated if some city Ham would like to fill the vacancy. The Council has no official capacity, has generously stepped into his old position. What about it boys?

At the same time we would like to wish Charlie 4K the prospect of a peaceful existence now that he has climbed out of the harness. He, too, has put endless years as Treasurer into the W.I.A. and I know that Council is sincerely grateful to him for his services. Well done. Fortunately, Jim 4OB has signified his willingness to fill this position and we all wish you ever success as Treasurer.

After the Council meeting, four boys were invited to remain for the Emergency Committee meeting. Vince 4VJ was in the chair, and after considerable discussion, many problems were discussed. The Emergency Committee, quite wisely I thought, formulated a plan to be presented in three separate stages. The Emergency Committee, which it embodies the vast problems of Civil Defence.

The boys concerned closely examined the results of the Convention competitions and it was noted with interest, after considering the information received from the Emergency Committee, that the 14 h.f./v.h.f. mobiles operating and by the numerous personal receivers, that stage of the W.I.A. Emergency Committee Plan was an unqualified success. It was also noted that general operating procedure would have to be modified and that the Emergency Committee would have to be maintained. It is hoped at a later date to present to a general meeting a tape recording of 67 amateur tanks in Lattin, A.L. operated by the SAME group. It has been noted that the operating procedure is one of the best ever heard. Keep it in mind, boys, it should be very interesting as well as instructive.

The only way that we can find a practical plan for Civil Defence is by supposition and argument, and consequently the Emergency Committee meeting in June, the boys in three different groups, under the guidance of Evan 4EF and John 4FP, tried to resolve the pattern of such a practical plan. The Emergency Committee, in stage 2, has decided that these discussions, of which there is to be another, puts the Amateur Emergency Committee to the test. Just what the picture is about.

Stage 3 will then be the first trial run amongst ourselves. A simulated emergency, requiring h.f. and v.h.f. mobiles, low power and a practical plan. Emergency Committee, two relay stations working into a central grid, (which in this case will be 4WJ) should then reveal any possible weak links that we may have overlooked.

The Emergency Committee has put a great deal of thought and effort into the preparation and presentation of the Amateur C.D.E.N. and they should be the boys as encouraged in undertaking such a task. We, the ordinary Amateur, can do this by just making that they are efficient and extending our cooperation wherever possible.

Our general meeting on 5/7/57 was one of the liveliest we've had for many a long day and quite a few fellows were present. I was sat on the sidelines! A circulation rumour has stimulated some members to object to the possibility of W.I.A. disposals gear quickly reaching the hands of non-members. Particularly when the gear went to ballot. Long discussion finally resolved the matter to the statement: "The gear will be sold to the highest bidder." A ballot can sell his gear only to another member, and any member who does otherwise,

without the consent of Council, will not be allowed to ballot for future disposals equipment." It is only fair, as there are always many more unsuccessful members in these ballots than successful ones.

After the air had cleared, the ballot for 20 1m. transceivers took place. Winners' names have been broadcast over 4WJ and will appear in the next issue. The boys were aware of the hat should any of the successful members not claim their gear. Members are requested to pay the balance of the purchase price for some within one month. Failure to do this will lose you the gear which will go to the five extra Hams whose names were drawn.

A lecture on mobile gear is to be given at the next general meeting. Several Hams will present their views on the subject of mobile gear and the operation of same. Should be quite an interesting evening.

Well it certainly pays to advertise! We had over 70 Hams and friends at the June Convention and a varied programme kept them all busy! Hams from Sydney, Newcastle, Co's Harbour, Brisbane, Gatton, Gympie and Townsville rubbed shoulders for three days at the National Fitness Centre. The boys chinned-wagged on Saturday morning, until most of the travellers had arrived at the camp. The boys, or less officially opened the long list of activities.

On Saturday morning the camp rig, operated by Aussie 4TN and our President, Frank 4ZM, was used for the first time. The boys were made for re-broadcast purposes over 4WJ. The 1 Mc. scramble was won by John 4FP with 23 contacts. John also captured the first 10 contacts in the 10 Mc. scramble. The boys chinned-wagged on Saturday morning, until most of the travellers had arrived at the camp. The boys, or less officially opened the long list of activities.

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On the Saturday night we had a very pleasant barbecue supplemented by a keg of that amber stuff. It was held at Morrie's home and of course Morrie, our cook, officiated. We had another barbecue on the 10th, at the home of the banks of the river. Thanks once again, Morrie, those steaks were delicious. Earlier on the 10th, the 10 Mc. scramble was won by Harry Peel, and the presentation prize was won by two gentlemen from the R.I. Dept., Messrs. P. Andrews and Monahan, who were visiting a nice feeling to know that they were visiting us socially rather than officially.

The latest news on our disposals trucks is that we have them and they are on their way up from Sydney. They are 6V6Gs and 6X50Ts, instructions on price, etc. have yet to be issued. "QTC" will contain all the necessary information. It comes to hand.

TOWNSVILLE

The last usual monthly meeting took place at the residence of the President. A number of the fellows turned up together with a few prospective Amateurs. Our Secretary, who has been working from a working holiday in the capital city, gave a report of his doing. The boys also a report on the monthly meetings of the W.I.A. he attended whilst there. Rex 4LR, who was in the Palm Beach Convention for the last long week-end, came back quite thrilled with it all, especially the hidden tx hunts and whether or not the secret can be held here; his report was well received.

After the usual minutes being read and disposed of, quite a lengthy discussion took place on spending of the club funds. It was realised that the funds would be used up before enough funds could be accumulated to obtain grounds and a building for the club. It was also noted that the club had a large membership, with such a large membership, has just as complicated same after many working bees to get the job finished. After a lot of cross-firing, the President decided to allow or allowed each in turn to give his views, so that everybody was quite clear in his own mind just what he wanted. The President then resolved that again the matter be left till next meeting, when a vote will be taken re the funds in hand. Main points being raised were that the club should have a library or purchase technical books for a library and who would hold and be responsible for same. The President then decided to allow or allowed each in turn to give his views, so that everybody was quite clear in his own mind just what he wanted. The President then resolved that again the matter be left till next meeting, when a vote will be taken re the funds in hand. Main points being raised were that the club should have a library or purchase technical books for a library and who would hold and be responsible for same.

On 19 June, so will in future enjoy a QSO! Pressure of work stopped all other work, just back from a business trip to Sydney, from attending the last meeting. Don 4PW in Collinsville has managed to work truly on 12 Mc. and hopes to have Jim 4XO re-building shortly. John 4DK heard on 3.5 Mc. with Vern 4LK. Sorry boys power line QRM prevents me working in Macquarie Island. Don 4PW has been working on 12 Mc. and hopes to have Jim 4XO re-building shortly. Hal 4EP in daily communication with Macquarie Island. And 4BW hobs up unexpectedly on 12 Mc. and hopes to have Jim 4XO re-building shortly. In Innisfail heard in sheds at night time with the boys in Cairns.

The gang in the Townsville area quite jubilant with the W.I.A. news that the following were successful in the ballot for the transceivers: John 4DK, Ted 4EJ, Rex 4LR, with 10 contacts in the 10 Mc. scramble. It was anticipated that 144 Mc. will get quite a lift when these transceivers are modified and pumping out signals. Also congratulations to Fern on his 144 Mc. article in June "A.R."

MARTYBROUGH

441 is busy building a new shack under his house. He has the first part of the shack built. The Mark 3 model based on a Geloso. Much hard work has been done building an enclosed shack. The shack is 15 ft. x 15 ft. and has a tube converter for 15 mX and has been heard on that band.

441 has heard some Africans on 10 mX on his 5X23 is thinking of returning to his old 10 mX standing ground. 4BG still plugging along on 20 and 15 mX, phone and c.w. At present 441Z is improving the landscape by putting up a steel tower.

SOUTH AUSTRALIA

Our new programme committee, Lloyd 5OK, Bob 5PU, Jack Watts, Des Kelly, Neil 5ZAW, produced the first programme for the last month. The programme was a night show with a very good film on Arnhem Land. The film was in excellent colour and was projected professionally. The programme was a night show with a very good film on Arnhem Land. The film was in excellent colour and was projected professionally. The programme was a night show with a very good film on Arnhem Land. The film was in excellent colour and was projected professionally.

Amongst the many visitors present, 4FW was from the most distant parts; you could hear him from two continents. He was again for we like to see our "air friends" when possible. It could also be said we had a lot of visitors from the States. The boys from the States, who were holidaying in Adelaide at that time and dropped in to see the boys. Hugsie being a v.h.f. type, will reserve report from him for the next issue.

Some new members were accepted, two full members being R. L. Umbarger, 5UM, and J. B. Hawke, 5BH, with associates P. L. Woodlands, M. J. Dew, and L. J. Ernst. Welcome fellows, hope you enjoy your membership. A transfer to us from ex-4KW, E. H. White, who now becomes 5GZ, and a transfer to us from ex-4WJ, who now becomes 5GZ, and a transfer to us from ex-4WJ, who now becomes 5GZ.

The boys who want to go more fully into the matter. The boys who want to go more fully into the matter. The boys who want to go more fully into the matter. The boys who want to go more fully into the matter. The boys who want to go more fully into the matter. The boys who want to go more fully into the matter. The boys who want to go more fully into the matter. The boys who want to go more fully into the matter.

One item of correspondence cleared the "Mail" for Brian SCA, he has been singularly lucky recent months in that most of the letters he has received (and addressed to him) have been of such a nature that the Treasurer has to handle them.

Gordon 5XU concluded the evening by giving us a run through on matters relating to moon watches and so on, and has further information for those who want to go more fully into the matter.

Bob 5OK's continuous c.w. signal will be listened for and due to the doppler effect will require a receiver band width of 6 Kc. The signal will be visible in the sky. The signal will be visible in the sky. The signal will be visible in the sky. The signal will be visible in the sky. The signal will be visible in the sky. The signal will be visible in the sky. The signal will be visible in the sky. The signal will be visible in the sky.

Our next picnic has been fixed for the January 1958. The picnic will be held at Teatreau Gully—more of that when details are worked out.

There have been a few enquiries of late for slow more transmissions and it is now learned that in addition to TOM 3TL on 3504 KC. 7 p.m. Thursdays, Doc SMD will be on the same frequency from 2.30 p.m. each Sunday. If you make use of these transmissions let them know, drop them a line or phone, for if no comments are received they are apt to think it's not being used and could be excused for dropping it off. It's up to you to help keeping it going by this means.

Have you ever heard VKYs calling CQ on 10 mx quite a few times lately, so you 10 mx boys should make some interesting contacts there. It's worth watching.

Talking of interest, now polish up the gear or operating procedures for R.D. Contest this month, give the present holders a run for their money or else you could be accused of taking trophy back this way—long time no see.

Sacrilege, that's the word, yes sir! Had a contact with John 53W last week, on 10 mx, stepped down from 15 mx, long enough, matter locally, nice to hear you John. Des SDK also was heard on the same band and getting out well. John's antenna was described by Des as needing a set of sails only to complete the illusion of a windjammer in the Wally MacKaydays.

Lance 5XL has been having a bit of modulator trouble lately and discovered that it (the mod.) works better on its side. OK Lance, do like Doc SMD did and build it on its side anyway, and you'll be sure to be on the air the way all the time. Burnie, 5WC's main op., advises us it's warm up there whilst we freeze down here. Good news, Burnie, get that steamers up for R.D. Burnie, good luck to you.

Col. SRO has broken the ice again lately, and has appeared on 80 mx, that's a slow down from 200, but it's a good thing. Chas SON (Wandering Chas.) has been doing great things with a new pre-selector and now works more than ever. Keith 5KH has at last met Chas. SON mainly to think as a result of Chas. wandering nearer him.

Dave 5BF has a much improved signal as a result of pre-selector rebuild. Dave 5BF really stirs the ether each Sunday with a 500 Ber, Bob 5BG has made a return to 40 mx after a long spell too, his very fine signal indicates no loss of technique as a result of the spell.

The latest Grey Beard is Claude 5CH, grab him! Gumbler gang, it's worth something surely to have a Gumbler in the net, it's a good thing amongst you. Col. 5CJ has pushed up his new shack some more and now has line to drop poles and solder on. Tom 5TW is rushing two new poles and has good and ready for 40 and 80, whilst ER 5KU keeps 20 mx going very actively with Stuart 5MS very silent, warm it up now for the main event. The contest will continue to engage John 5JA, Congrats Bram 5AB, a new daughter no less, who with a new 200 and 15 mx makes two new babies, good luck Tom.

Quite a lot of interest is being shown amongst the boys on double sideband reduced carrier, so don't be surprised if you hear a new sounding signal two soon. The arguments that are going on between the two ideas of s.s.b. and d.s.b. indicate more interest in this than hobbyists and amateurs. The arguments are long time, and at least will promote some hasty re-builds. Adding to this "CQ" has come to light what a real smart idea to receive it, but there is no excuse to hold back now, the way, whichever way you may argue on its merit, if d.s.b. is generated at low level and needs a pre-selector, why not use the same pre-selector for s.s.b. and the whole argument can be filtered later on and the whole argument can be filtered later on.

WESTERN AUSTRALIA

We are very sorry to report this month the loss of Len 5H after a spell of illness. Len will be missed by his many friends. The Division has lost a valued member, and we all extend our sympathy to Mrs. Trunfull.

OBITUARY

LEN TRUNFULL, VK6RT

VK6s will regret the passing of Len Trunfull, VK6RT, an Amateur of many years standing. He was buried in Karrakatta cemetery on June 21. The W.V.A. Division, extends its sincere sympathy to his widow, Enid, in her loss. VK6RT was 81 in an illness about 10 days, but always, anxious to help others, and grateful for any suggestions.

VK6RW made the announcement on the New couple of days after his death and maintained one minute's silence on an unmodulated carrier.

The regional meeting for June was held on 18th and 6HR gave a very interesting talk and demonstration on Thyatron Control of Motors. During the month local activity was apparent on 40 mx and 80 mx at some times or other, and 80 mx showed increasing activity, several new calls and some old ones rarely heard on the 150 ft. band were noticed.

John, whose voice is familiar from the club station at Pierce (8AF) is putting out a good sig on 80 mx with his new call 6JM. 6JM is very active with 200 and 150 ft. band, modulator and new mike, and 6HK has been heard again on the band. Stan 6AH, now out of Wyalapa, and sends the days back to that way, is on 40 mx c.e. with low power on 150 ft. end. Another surprise on 40 was 6CN. Judging by Cyril's sigs he should really go to 100, where his new rig is completed. 6ER was on c.w. 6TR is putting in a very good sig from his new QTH in Vic. Park. 6BE is busy getting a 40 ft. tower transported and re-erected. 6EJ worked 3FC with his 100 running half a watt c.w. on 40 mx for RST 558. 6DJ is still pounding the key and very nice lot 6BO has also been heard on the 150 ft. band, a change from v.h.f. Role? 6JR makes occasional appearances, likewise 6WS and 6BB. 6AFW Wally Cox celebrated his year 50 years in radio. Back in 1907, before the days of crystal reception, with two or three others in W.A. and a dozen or so in Australia, Wally started on his ham radio. In 1910, he got into Ford cars provided a means of transmission in the first days. With ventures into commercial, into radio, into broadcast stations, to conducting a radio business, Wally has always found time to devote to Amateur activity, and says that whilst the first 50 years of his life were a thrill, he will provide some new avenues for investigation!

Wally has been associated with the Royal Flying Corps for some time, and has been the radio development of bases and outposts being to his work.

To his early associates still on deck, Wally sends his greetings per medium of "A.R."

TASMANIA

Ah, the unaccountable irreverences cast by the Northerners upon these countable grey hairs. Still—

Wot boots it that the voltage lingers on, and the voltage lingers on, and the voltage lingers on. Wot sort of bloke will never take the chance And hope it's gone?

He's the bloke wot has already give two boots, and the voltage lingers on, and the voltage lingers on. He's cautious 'cos he's found the 'ere, 'ere Wot boots.

At the July meeting another good lecture, this time from Joe TB, who modestly dubbed it "Bite and Pieces", dealt with the various possibilities of double sideband suppressed carrier. You know, stereophonic static. And it's heard that one or two of Joe's hints and kinks on rx technique have been tried already, with happy results. Rumour has it, too, that he has been furiously trying EL32 in the FRONT of his 6AR7.

Len TLE plans a telling blow for 144 Mc. with a fox hunt scheduled for the evening of 29th July. It is wot, it is wot, it is wot, so because those who grill their batteries can console themselves with the prospect of grilling some chops and things afterwards on the TLE estate.

The Sunday morning round-up gets more and more of them out of bed by 10 a.m. despite the temperature. The weather on Sunday: 7BJ, 7BT, 7CA, 7CT, 7JO, 7KA, 7KC, 7LE, 7LT, 7LS, 7LM, 7MP, 7RM, 7RX, 7TY, 7SM, 7YR for some essential contact with a counter-rotating clock, the calling in has proceeded from the northwest around to the south on most occasions. Now it is to go the other way for a while, and the weather is a poor old 7CT from his customary spot on the end of the queue.

7BT and 7LT are to be heard on their patient job of QSL-sorting. It's believed that 6CJ in the municipality of Esperance proposes trying his luck some Sunday, while the northern limit appears to be made by 7JF. Jack expects to resume his better-known call 7JB for good in October.

A thought to the R.D. Contest: It's all right to get excited about the rules and one thing and another. But if we can't win it, there is precedent enough in those we commemorate to tell us that it's a day . . . to lose it as actively as possible.

NORTH WESTERN ZONE

I trust that by now you will have all given a true and faithful record of your income for the year. As far as I know it is not permissible to claim capital cost on that new rig!

And how's about all those little old sunspots — looks as though old Sol must have measles or perhaps chicken pox—ask Dennis TDR about that. I don't think it will be going to be the chicken pox, I mean. I haven't seen any of these Ronrin' Australians in spite of persistent reports, but I hope those active boys with 7.6 calls make use of them to bounce a U.I.F. wave over vast distances.

One of our latest additions to the North West, 7LE is no longer a 7LE, but now operating as 7KC for a month or two now. I'm told there is room for a buffet and lounge chair in lounge, or shack, beside the rig, Lee.

We have another very keen type transferred into our area, Pat 7PM from Kelso. He has been banished to Stanley to work over the U.H.F. Radio Link. Pat seems concerned about the fact that he cannot bring his rhombic with him, unfortunately it covers about an acre of ground. Pat has received some nice QSL cards last time I was there—all DX, of course. Incidentally, Pat had news of Reg TWN, who at present is recuperating at Beaconsfield. Best regards to you and yours Reg.

The really big item for July was the zone meeting held at Roy TRN's, and it appears that everything about it was colossal. The numbers present, the amazing amount of junk sold for phenomenal prices, and the super program by Roy TRN, and the U.I.F. wave in make it, Joy, but I was told by Sid TIF that he couldn't eat another mouthful.

No. 11 sets are in the news again. One has been bought from Ian MacGinnia, to be precise. Owned by Myles MacGinnia, who boasts a 2nd Class Commercial, so we should here of a radio for sale. For sale here soon. Another member too, do you think?

HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th of the month, and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line. Dealers' advertisements not accepted in this column.

FOR SALE: BC348 Rx 14 ths. Dble. Conv. XII. cont. 915-175 KC. Tx-Geloso 1000 w/2E26, pi-sect, 1000 143 and 141. tran. 6M6, 6C5, 675w mod. components, brand new, drilled chassis & cabinet, mic, etc. Pwr. supplies, meters, parts, antenna, etc. The lot £270 or offer parts. J. Battrick, Bayview Rd., Frankston, Vic. (Tel. 278D)

SELL: Pair "Reyco" multiband dipole coils (see "QST" Mar. '55). Labgear Wideband Multiplier, switched 80 thru 10w, new, with pair 12BH7 tubes. Johnson Viking SWR Bridge (new). Pair 4-125A tubes, one new, other used few hours, with sockets. One 4-65A tube, new, w/socket. Tx-exciter for 20, 15, 10, uses 3 x 6AM6, one 5763, one 6146 or 2E26, complete with tubes; has v.f.o. w/variable L.v. dial, calibrated, in black metal case, wired w/shielded h.c. up and ceramic disc by-passed; gift for less than cost of parts. Kit of parts for Edmonds Xtal s.s.b. filter exciter, includes 13 x FT241A xtls. (455 KC. carrier), U & L s.s. reject, with xformers, ceramic switches and slug tuned formers for converter stage; all new and first quality; anyone want them? Write for further details. J. K. Herd, P.O. Box 73, Wangaratta, Vic.

SELL: Type 3 Mk. II, Heising scr. mod. xtal, xtal, spkr. Good condition. £40. P. Davies, 31 Jackson St., Toorak, Vic. (LA 8899).

WANTED: 144 Mc. gear, components. Harry Dobbey, 42 Walnut Ave., Mil-dura, Vic.

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BANDSPREAD. The essentials of good bandspread are firstly a long scale and secondly a good drive mechanism. The "888" offers a scale 12" long and a geared drive mechanism having a reduction ratio of 40:1. With the vernier scale the mean average readings are:

Range	Freq. Limits (Kc/s.)	Kc/s. per division
1.	28,000 — 30,000	2.0
2.	21,000 — 21,500	0.7
3.	14,000 — 14,350	0.5
4.	7,000 — 7,300	0.33
5.	3,500 — 4,000	0.7
6.	1,800 — 2,000	0.25

FREQUENCY STABILITY. Excellent overall frequency stability is given by the oscillator circuit design. Negative temperature co-efficient condensers counteract long-term drift.

BUILT-IN CRYSTAL CALIBRATOR. The crystal calibrator provides marker points every 100 Kc/s. Positive corrections due to any slight circuit variation are easily made by the use of this calibrator and trimmer condenser.

AUDIO FILTER. Incorporated in the "888" is an audio filter, peaking at 1,000 cycles and having a bandwidth of 100 cycles for c.w. reception.

MONITORING. With Stand-by Switch "off", the receiver is de-sensitised but not fully muted, enabling c.w. and telephony monitoring of local transmission. Stand-by sensitivity is adjustable.

ELECTRICAL PERFORMANCE. Sensitivity throughout is better than 3 microvolts for a 20 db. signal-to-noise ratio (50 milliwatts output, 30% modulation); absolute sensitivity on c.w. is better than 0.5 microvolts.

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OTHER FEATURES. A rear socket takes the plug of Eddystone Cat. No. 668 "S" Meter; another permits use of vibrator power pack.

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